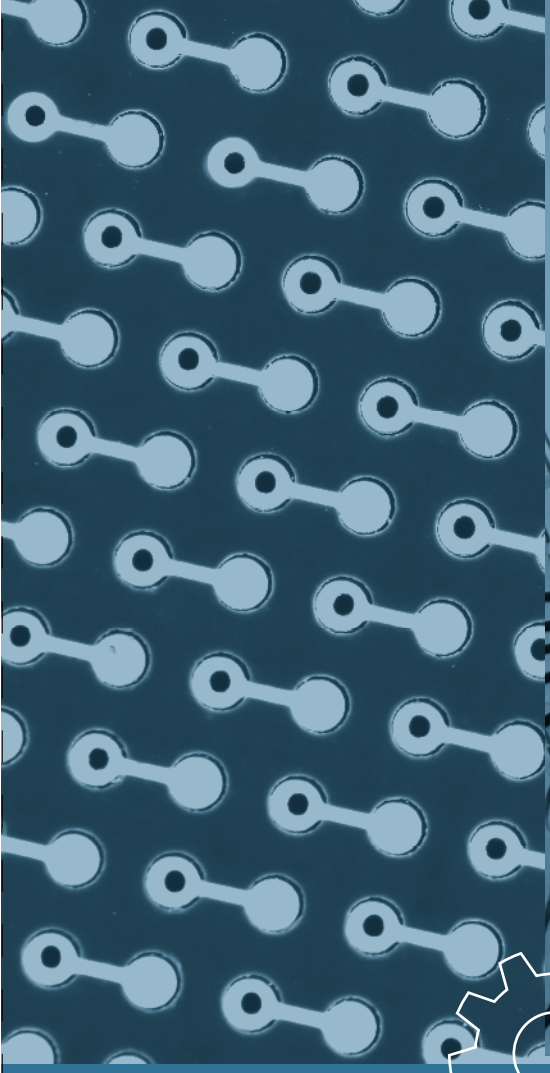
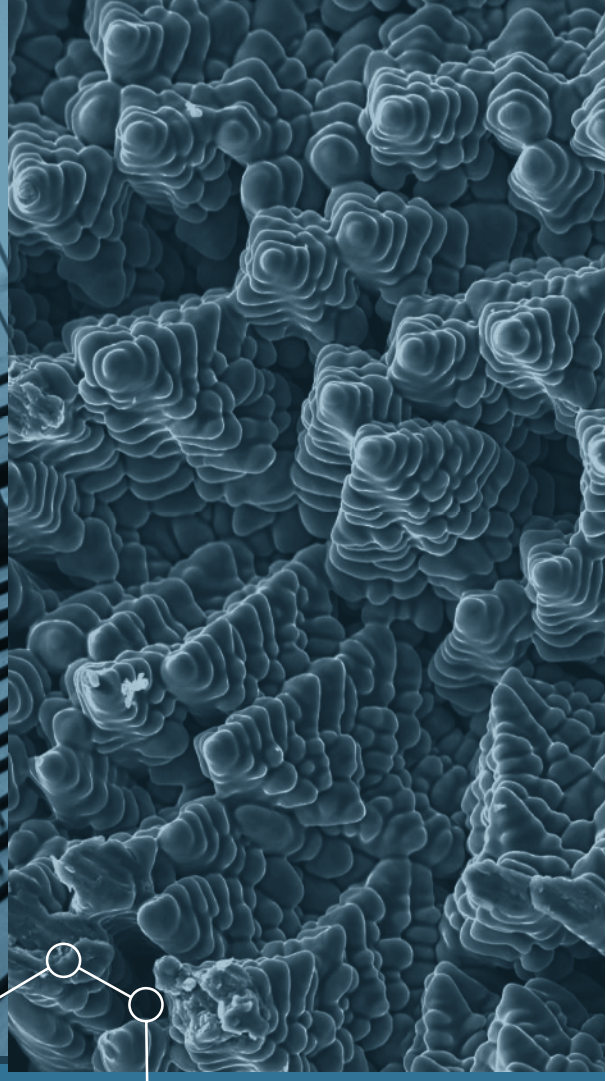
RYERSON UNIVERSITY





FACULTY OF ENGINEERING, ARCHITECTURE AND SCIENCE

ANNUAL REPORT 2006

CONTENTS

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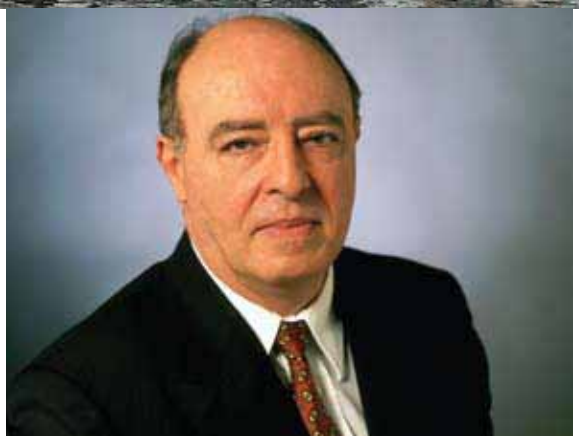


Dear Friends,

I want to commend our faculty, students, and funding partners on contributing to the strength of multidisciplinary research and teaching achievements emerging at Ryerson University's Faculty of Engineering, Architecture and Science.

Ryerson University is fast becoming an institution of international stature in research initiatives that address the needs of our society globally, nationally, and locally. The collaborative culture at Ryerson University provides many opportunities for students, researchers, and professors coming from across North America and around the world, to embrace rewarding partnerships with senior faculty members, research institutions, government ministries, and established industry partners.

Greatest achievements in 2006 included welcoming our sixth Canada Research Chair, and our first NSERC Industrial Research Chair to our distinctive research culture; the launch of new undergraduate programs in Science (Biology, Chemistry, Contemporary Science and Medical Physics), new Masters programs in Science and a Doctoral program in Chemical Engineering; curriculum development for soon to be introduced undergraduate options in Mechatronics, Avionics, Multimedia Communication, and a new program in Biomedical Engineering; and preparations for further graduate programs in Architectural Science, Computer Science, and Aerospace Engineering.

Our Faculty's evolution brought on a wealth of new hires. New faculty members follow in the Ryerson University tradition of being progressive and rigorous members of the research community who have made advances of distinction in their areas, who evoke new ways of thinking about our world, who lead industry members with innovation, and who have the ability to excite generations of students in their field.

Our ability to attract this level of talent has galvanized our international reputation as an institution of excellence in teaching and research. We're seeing an increased percentage of international students who inject a further level of competition and quality into our student population, and so we actively continue our efforts to promote these intercultural links. People from everywhere in the world come to us to learn Canadian methodologies and integrate them into their country's economy.

The prominent milestone we reached during the past academic year was the achievement in June 2006 of the highest possible accreditation status of any new engineering program, for our "new" Computer Engineering Program. This accreditation status was awarded by the Canadian Engineering Accreditation Board following the peer-based quality assessment of the program in February

MESSAGE FROM THE DEAN

DR. STALIN A. BOCTOR, PENG

2006. The first group of Computer Engineering graduates who first enrolled in this program in September 2002, were awarded their now fully accredited engineering degrees during the June '06 Convocation. This achievement confirms the Faculty's and the University's strong commitment to the provision of high-quality professional-career educational programs to its students. The other six engineering programs offered by the Faculty will be undergoing the required cyclical quality assessment re-accreditation process during the 2006/07 academic year.

The demand for all of our undergraduate programs has been steady, and strong. This is very clear in the case of our new Science programs whose second cohort is 40% larger than last year. In September 2006, our two newest graduate programs: Medical Physics and Molecular Science, were implemented. Our overall graduate enrolment in September 2006 was approximately 714 students, almost 4 times growth rate since September 2001, i.e. over a very short five years time period. Again, this fact confirms the Faculty's significant success in offering comprehensive educational opportunities to its program students. The corresponding growth in our undergraduate and graduate teaching, laboratories, and research infrastructures facilities, is similarly impressive.

Our First-Year and Common Engineering and our First-Year Science Offices proved to be enormously successful in providing needed support to our new students. Academic and social counseling and experienced and supportive staff members have helped numerous first-year engineering and science students in coping with the significant challenges they confronted in their new experiences at university life. Also, the "Management Science" optional specialization continues to be well received. The first group of students, who will graduate with this option listed on their transcripts, will do so in 2007.

I would like to congratulate all of our engineering student's competitive teams for their superb efforts in 2006. Specifically, we are proud of our Concrete Canoe team, our first-place winning Industrial Engineering Design team, our Electrical Engineering and Architectural Science Energy Ambassador winning teams, our second-place winner Bridge Building team and our Aerospace CanSat winning team, among many others.

Ryerson University is proving itself to be a leading post-secondary institution on all fronts—ensuring that Canadians benefit in tangible ways from public investment in research and university-level professional career educational opportunities, and that Canadian society has access to highly qualified people in specialized professions.

We are creating a culture of academic excellence that extends beyond the boundaries of the institution and forms a convergence with industry and government. In creating an awareness of ourselves as citizens of the world, we are becoming leaders not just in technological advancement, but also in educating students with a profitable and sustainable vision of the future.

Sincerely,

Dr. Stalin A. Boctor, PEng
Dean, Faculty of Engineering, Architecture and Science

RYERSON UNIVERSITY AND THE FACULTY OF ENGINEERING, ARCHITECTURE AND SCIENCE

2006 HIGHLIGHTS

FEAS MISSION STATEMENT

THE MISSION OF THE FACULTY IS TO CREATE KNOWLEDGE AND ADVANCE RESEARCH IN ENGINEERING, SCIENCE AND THE BUILT ENVIRONMENT TO ADDRESS SOCIETAL NEEDS IN THESE ESSENTIAL FIELDS; AND TO DISSEMINATE RELEVANT STATE-OF-THE-ART INFORMATION AND KNOWLEDGE THROUGH THE PROVISION OF PROGRAMS OF STUDY WHICH WILL PROVIDE A BALANCE BETWEEN THEORY AND APPLICATION, AND PREPARE STUDENTS FOR PROFESSIONAL CAREERS AND LIFELONG LEARNING CAPABILITIES IN THE ENGINEERING, NATURAL SCIENCE, COMPUTER SCIENCE AND ARCHITECTURAL FIELDS.

According to the Ontario Universities' Application Centre, Ryerson is #1 in the province in the growth of applications from secondary school students.

Ryerson's Faculty of Engineering, Architecture and Science includes one of the largest faculties of its kind in Canada with 4200 undergraduate and 714 graduate students.

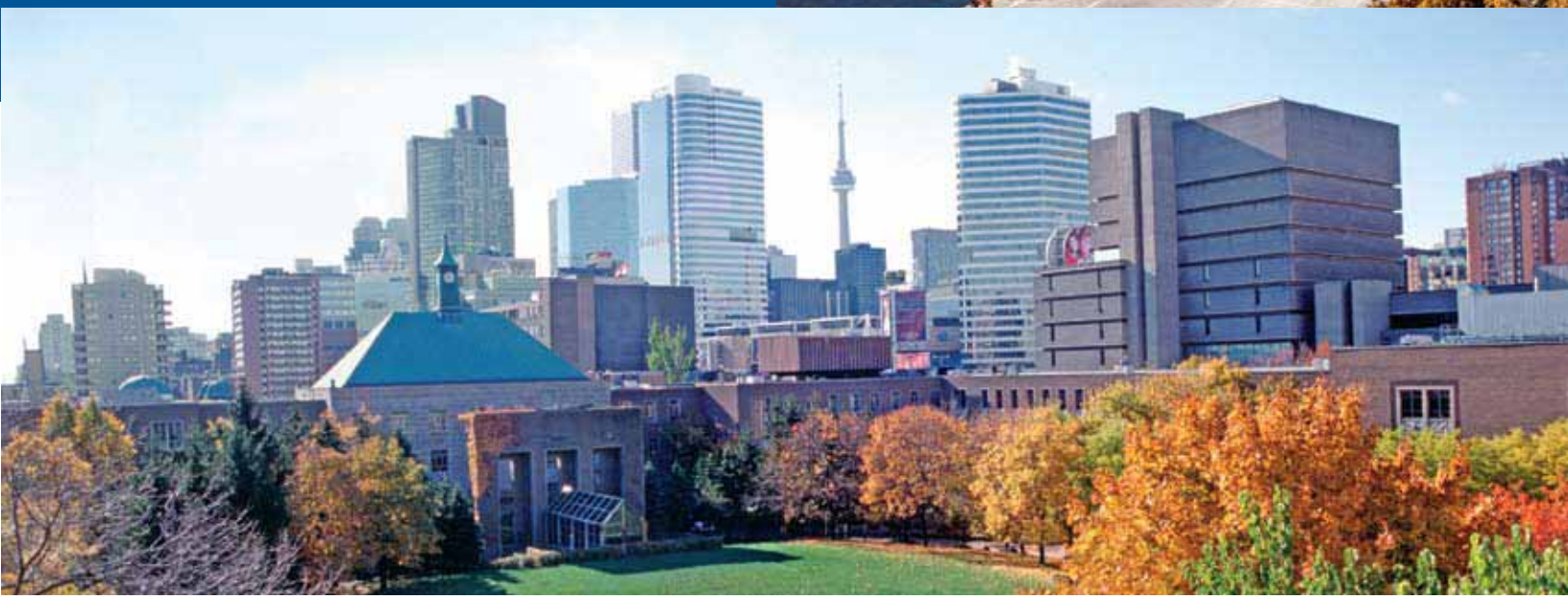
Ryerson University welcomed Dr. Anastasios (Tas) Venetsanopoulos in the new position of Vice-President Research and Innovation. Dr. Venetsanopoulos is an internationally recognized researcher, scholar, professor, consultant and widely published author in the field of electrical engineering. This senior-level position is designed to increase visibility for Ryerson's research enterprise externally, and create a research environment that attracts high-quality faculty and supports graduate and undergraduate students in becoming the next generation of innovators.

New Ryerson graduate programs approved for fall 2007 include Aerospace Engineering, Architecture, Computer Science, Documentary Media, Journalism, Nutrition Communication and Psychology.

FEAS alumni John Galt (Mechanical Engineering '85), President and CEO of Husky Injection Molding Systems Ltd., and Tony Szantos (Electrical Engineering '68), founder of Luxcom Technologies were presented with Alumni Achievement Awards in recognition of their significant contributions to their professions and to the community

Students at Ryerson will benefit from an additional $385,000 a year in student financial awards as a result of a new Ontario government matching program, the Ontario Trust for Student Support (OTSS). Private sector donations made by our generous supporters and matched under OTSS increased Ryerson's total endowment by $7.7 million. Over $1.7 million in new endowments will benefit students in the Faculty of Engineering, Architecture and Science.

FEAS AT A GLANCE



UNDERGRADUATE PROGRAMS

Aerospace Engineering (BEng)
Architectural Science (BArchSc)
Biology (BSc)
Chemistry (BSc)
Contemporary Science (BSc)
Chemical Engineering (BEng)
Civil Engineering (BEng)
Computer Engineering (BEng)
Computer Science (BSc)
Electrical Engineering (BEng)
Industrial Engineering (BEng
Mechanical Engineering (BEng)
Medical Physics (BSc)

NEW UNDERGRADUATE PROGRAMS UNDER DEVELOPMENT

Mathematics (BSc)
Biomedical Engineering (BEng)

GRADUATE PROGRAMS

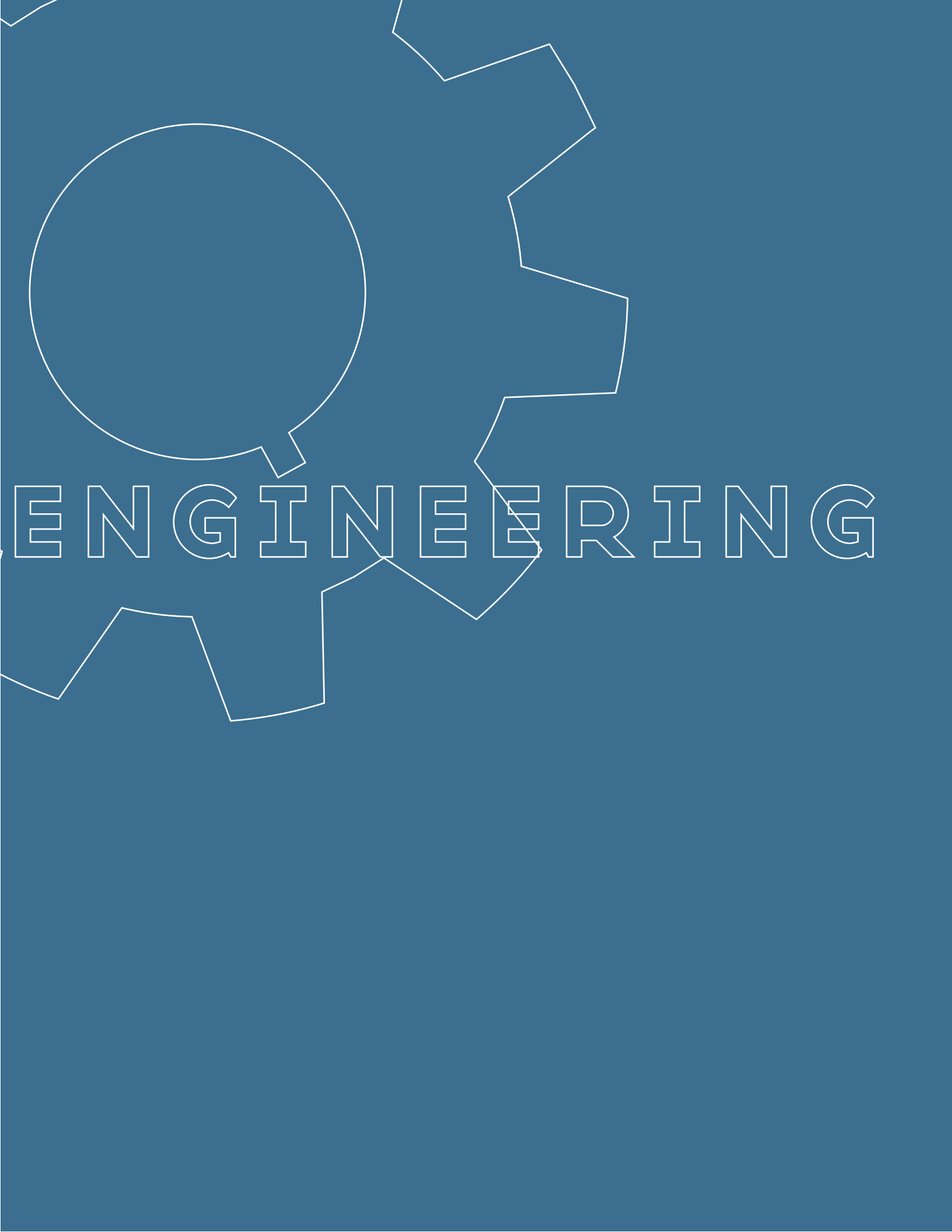
Biomedical Physics (MSc)
Chemical Engineering
(MASc, MEng, PhD)
Civil Enginering (MASc, MEng, PhD)
Computer Networks (MASc, MEng)
Electrical and Computer Engineering
(MASc, MEng, PhD)
Environmental Applied Science and
Management (MASc)
Mechanical Engineering
(MASc, MEng, PhD)
Molecular Science (MSc)

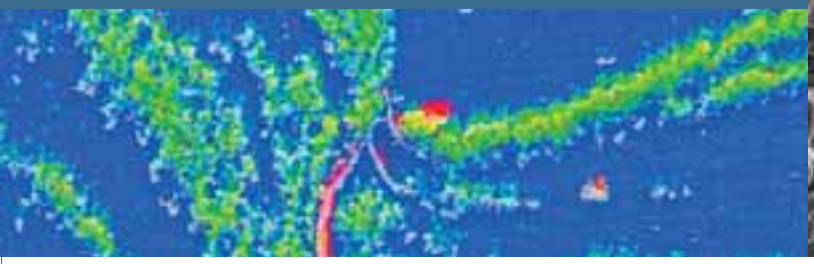
NEW GRADUATE PROGRAMS (FALL 2007)

Aerospace Engineering
(MASc, MEng, PhD)
Architectural Science (MArch)
Computer Science (MSc)

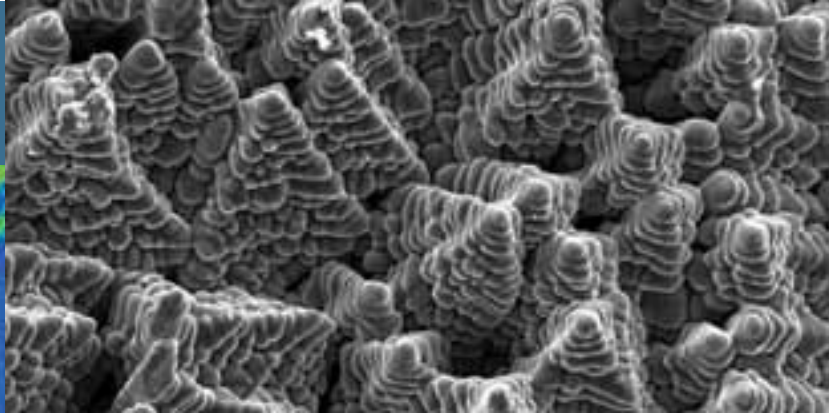
NEW GRADUATE PROGRAMS UNDER DEVELOPMENT

Applied Mathematics (MSc)
Biomedical Engineering
(MASc, MEng, PhD)
Building Science (MBS)


ENGINEERING



"FLOWER PATTERN", VORTEXES IN A FRICTION-STIR–WELDED JOINT OF MAGNESIUM ALLOY VERSUS ALUMINUM ALLOY



DENDRITIC MICROSTRUCTURE OF SPOT-WELDED GALVANIZED AUTOMOTIVE STEEL, OBSERVED WITH THE SCANNING ELECTRON MICROSCOPE

REDUCE-REUSE-RECYCLE

TESTING NEW MATERIALS IN AN AGE OF SUSTAINABILITY

"Reduce-reuse-recycle" is a mantra many take for granted these days: sustainability and conservation are being discussed across all industries. Even so, consumers, business and governments still demand new, "better-faster-stronger-less-expensive" products, so technology must evolve to keep up.

So how do you reconcile sustainability with the demand for innovative materials that can be produced and formed into products? The answer is in developing new engineered materials that in themselves aid conservation. A key factor is insuring that the characteristics and properties of these materials meet the demands of their intended use.

Ryerson's FEAS professors are advancing the development of new materials and are applying innovative approaches to investigate and understand their properties. Dr. Daolun Chen of the Department of Mechanical and Industrial Engineering studies material fatigue under different manufacturing conditions. In the Department of Aerospace Engineering, Dr. Jeff Xi looks at automation and Dr. Cheung Poon studies properties of composites and laminates.

The results of their work are already making a difference to the longevity and weight of new transportation components, biomedical implants and other human inventions. The Aerospace industry is interested in this work because a reduction in the weight of components means less fuel is needed. The automotive industry could benefit similarly, while longer-lasting parts could increase safety and reduce costs for the biomedical industry.

Dr. Poon jokes about being a welder, but it's clear that his work has broad-reaching implications in aerospace. "I'm interested in the properties of carbon fibre composites and fibre metal laminates," he says. "I study material failure by breaking materials. I want to know if the material is behaving in a ductile (stretching) manner, or is brittle, or if it's failed by a fatigue mechanism."

Dr. Chen studies fatigue and fracture resistance in high-performance advanced materials. His approach to the study of materials is being applied in his laboratory to a myriad of applications in aerospace, automotive, energy, biomedical, electronic and pressure-vessel industries. For reasons of safety, longevity and cost and environmental sensitivity, many transportation-related industries are interested in Chen's studies of how new materials will behave under different types of conditions. And knowing that an implant is strong and damage-resistant will mean a great deal to the biomedical industry, not to mention recipients of the implants.

Dr. Xi is interested in joining materials, but in a different way from Dr. Poon. "My goal is to bring greater efficiency and lower costs to aircraft manufacturing through research into robotic riveting," he says. "Right now, aircraft wings are riveted with a machine, and the rest of the body is done by hand."

In Xi's work, he may use some of the new materials that Poon, Cheung or others have examined in order to see how they might work in a robotic riveting environment. How strong, flexible, lightweight, is the final component after the robots have assembled it? Is the robotic process for assembling the component as efficient as or more efficient than manual assembly? "At the end of the day," Xi observes, "it's not enough to be faster and better, the component also has to be reliable."

LIFE INSIDE THE CAVE—AN IMMERSIVE VIRTUAL REALITY ROOM THAT WILL BE DEVELOPED BY DR. GUAN AS PART OF HIS RESEARCH; RESEARCHERS WILL BE ABLE TO OBSERVE OBJECTS OR ACTIVITIES FROM DIFFERENT ANGLES AND IN DIFFERENT TIMELINES.

MULTIDISCIPLINARY MULTIMEDIA

C-IM² LAYS GROUNDWORK FOR ADVANCED MULTIMEDIA RESEARCH

Most people think of multimedia in terms of the sound-and-graphic-oriented consumer technology we use on the web or buy from our local electronics store. But a medium—literally, the means by which something is communicated—can take many forms. Statistics, touch and depth all tell part of a story that may not be so well communicated with current two-dimensional graphics and sound.

In 2006, the University received $1.3 million in grants from the Canada Foundation for Innovation (CFI) and the Ontario Research Fund (ORF) to establish the state-of-the-art Centre for Interactive Multimedia Information Mining (CIMIM, or "C-IM²"). With Ryerson's additional contribution of $1.16 million, the University is now in the process of building a remarkable R&D facility with which to ask some very complex questions.

DIGITIZE, ANALYSE AND LINK

"Multimedia information mining" is a phrase that refers to the ability to extract and link information being generated across media. The challenges of this are multifaceted: as consumers, businesses and governments digitize more and more information, database systems must store and manipulate growing volumes of data. The technologies for analyzing, processing and managing haven't kept pace, though. C-IM²'s objective is to achieve a breakthrough and find ways to make that information more useful.

C-IM² has begun with the purchase of high-end tools to allow multidimensional graphics and the processing of large amounts of information. This includes an immersive virtual reality room (known as "the cave"), 3D graphics stations for different locations in the University (linked via an intranet) and collaborative software. These initial purchases will be built up with additional hardware and software purchases, as well as development from Ryerson and collaborative partners that include other universities and multimedia and IT companies.

THE KEY C-IM² RESEARCHERS

PRINCIPAL INVESTIGATOR:

- Electrical and Computer Engineering's Dr. Ling Guan, the Tier I Canada Research Chair in Multimedia and Computer Technology.

CO-INVESTIGATORS IN THE FACULTY OF ENGINEERING, ARCHITECTURE AND SCIENCE:

- Electrical and Computer Engineering's Dr. Dimitrios Androutsos.
- Mechanical and Industrial Engineering's Dr. Liping Fang.
- Computer Science's Dr. Tim McInerney.
- Chemistry and Biology's Dr. Gideon Wolfaardt, the Tier II Canada Research Chair in Biofilms & Interfaces.
- Electrical and Computer Engineering's Dr. Xiao-Ping Zhang.

CO-INVESTIGATORS IN OTHER FACULTIES:

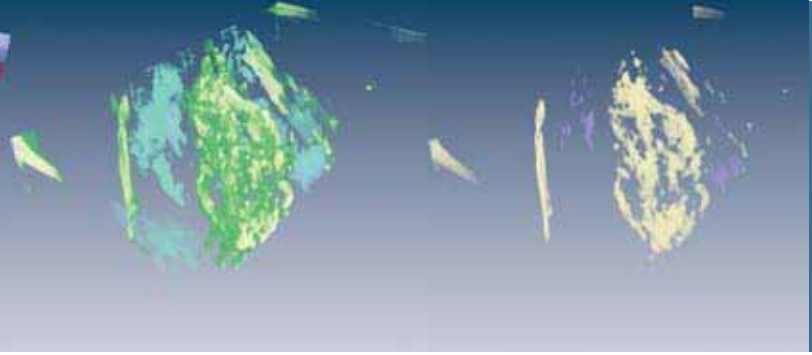
- Faculty of Communication and Design/Image Arts' Bruce Elder, Ryerson Research Chair and winner of the 2007 Governor General's Awards in Visual and Media Arts.
- Faculty of Communication and Design/Journalism's Abby Goodrum, the Velma Rogers Graham Research Chair in News Media and Technology.
- Faculty of Business' Dr. Tony Hernandez, Associate Chair-Eaton Chair in Retailing, of the Faculty's Centre for the Study of Commercial Activity.

EXTERNAL CO-INVESTIGATOR:

- The University of Waterloo's Dr. Mohamed Kamel, the Tier I Canada Research Chair in Cooperative Intelligent Systems.

KNOWLEDGE FUSION AND RELATIONSHIPS

If a computer is an extension of the human brain, then this is an evolutionary leap forward, explains Dr. Ling Guan, the primary researcher at C-IM² and Ryerson's Canada Research Chair in Multimedia and Computer Technology. "The technologies now available to us are affecting how we learn and educate, and how we use and deliver services, business, healthcare, entertainment and art." He continues: "But we are limited by the limits of our technology."



MULTIDIMENSIONAL IMAGES OF A CHROMOSOME AS LAYERS ARE PROGRESSIVELY "PEELED AWAY". "BY FUSING INFORMATION FROM DIFFERENT MEDIA YOU CAN LOOK AT INFORMATION DIFFERENTLY, SEE DIFFERENT DIMENSIONS OF IT AND GAIN A BETTER UNDERSTANDING OF WHAT IS ACTUALLY HAPPENING."

MULTI-USE MULTIMEDIA

The possibilities are huge, but here are just a few ideas that could be developed through the multidisciplinary C-IM2:

- A "time tunnel" that a filmmaker can use to edit from different angles or space/time sequences.
- Visual sequencing of cell development to allow medical researchers to lay out multiple images showing how a cluster of cells has developed and may continue to develop.
- A business person studying an artificial society to understand collective behaviours.
- Training security robots to recognize suspicious conduct and to navigate around obstacles in an artificial airport.
- Archiving and retrieving information based on criteria that computer systems teach themselves to apply.

Guan explains that across all types of users, there is a need for new ways to manage and extract information. The challenges include storage and processing power, as well as the means to link information that might not be immediately obvious. For example, Microbiologist Dr. Steven Liss is working with computer engineers to develop ways to separate out tedious and subjective tasks taken on by biologists. This is known as "unsupervised data mining" and is a form of artificial intelligence.

Other ways that researchers are using the facility include:

- Image Arts professor Bruce Elder is collaborating with computer engineers to develop better forms of interactive processing, such as the ability to take a moving object in a video clip and alter its motion and/or appearance automatically.
- Electrical and Computer Engineering's Dr. Dimitri Androutsos is involved in an ongoing collaborative project with IMAX. One of the first commercial applications will be to automate the conversion of two-dimensional films to three, which involves developing software that can, for example, distinguish between foreground and background objects. Androutsos' work will benefit from C-IM²'s 3D monitors.

With C-IM², says Guan, "The idea is to be able to fuse sensory data from different media sources and to understand the relationship of things in space across time." He adds, "By fusing information from different media you can look at information differently, see different dimensions of it and gain a better understanding of what is actually happening."

COMPONENTS OF C-IM³

1. GRAPHICS/VISUALIZATION: 3D graphics equipment, including conventional monitors with stereo glasses, plus a cutting-edge monitor with 360-degree views.

2. VIRTUAL REALITY FACILITY: Known as "The Cave," this flexible virtual reality room allows images to be projected on three walls and the floor simultaneously, thus enabling researchers to enjoy a close-up look at objects or activities from different angles and in different timelines. Stereo glasses and a controller allow researchers to move objects in three dimensions.

3. COMPUTING FACILITY: Interactive multimedia information mining requires analyzing, processing and visualizing voluminous multimedia data. A powerful computing facility, including a graphics server, a data storage/backup unit and network switches, to provide effective and robust solutions. Components have been purchased, but others are under research and development within Ryerson itself.

4. APPROXIMATELY 2000 SQUARE FEET OF RESEARCH SPACE IN ERIC PALIN HALL In the future, the facility may also include a 3D projection tool to allow researchers to walk around an object from the outside, top and bottom.

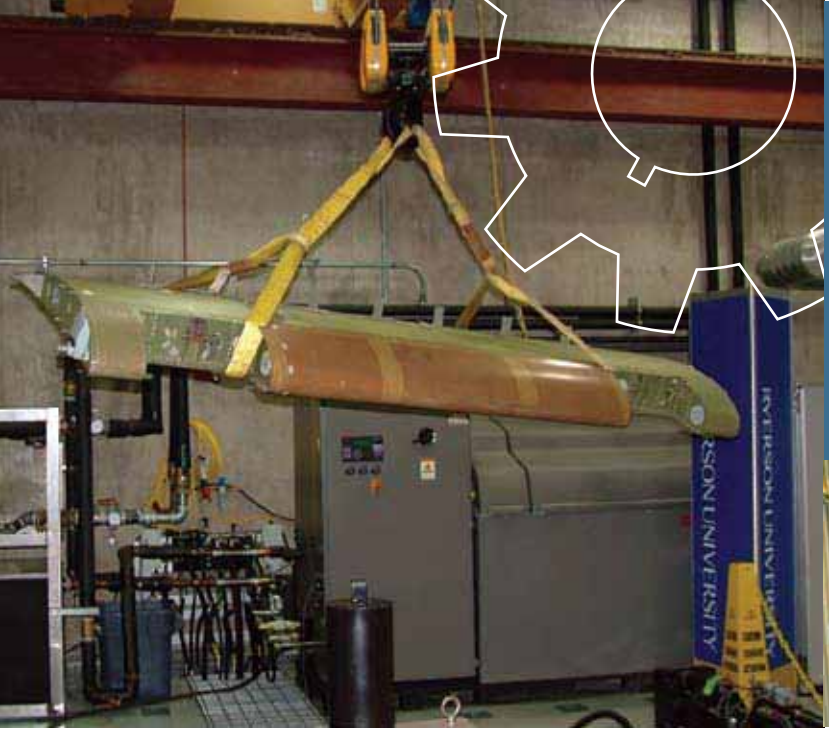
GOOD POSITIONING

Prior to the initiation of C-IM², Ryerson was already well positioned for this research. The University has multidisciplinary units across the Faculty of Engineering, Architecture and Science, the Faculty of Communication and Design, and the Faculty of Business.

The benefits are myriad: within Ryerson itself, C-IM² offers a leading-edge research infrastructure for further expansion of Ryerson's School of Graduate Studies. The participating faculties already offer several graduate programs leading to Master's and PhD degrees, and the demand is increasing.

Beyond the University, Ryerson's location in the heart of downtown Toronto—Ontario's primary centre in media, health care and business—puts it within easy reach of new media, medicine/bioscience and commercial interests and presents many opportunities for collaboration. The C-IM² research activity is of enormous interest to these sectors and will mean research, artistic and commercial benefits across Canada.

C-IM² is already offering phenomenal opportunities to researchers, with more to come. Their work will enable further research that will ultimately be transferred to business, medicine, the arts and other areas. Guan sums it up: "C-IM² is an astonishing, cutting-edge bridge between academia and industry."



ryerson.ca/~aeronet/

AEROSPACE ENGINEERING

CHAIR: DR. KAMRAN BEHDINAN

DR. KRISHNA KUMAR (LEFT) RECEIVES THE ONTARIO EARLY RESEARCHER AWARD FOR HIS WORK WITH MINIATURE SATELLITES

Dr. Krishna Kumar received the Ontario Early Researcher award for his work with miniature satellites. Dr. Kumar's satellites weigh less than a kilogram, and include micro-electromechanical systems and nanotechnologies for systems engineering, flight control, and mission analysis. Dr. Kumar is currently an Associate Professor in the Department of Aerospace Engineering, but earned his PhD in Aerospace from the Indian Institute of Technology.

The Early Researcher Award program helps promising, recently appointed Ontario researchers build and fund research teams. The program's goal is to improve Ontario's ability to attract and retain the brightest talent in high-priority economic sectors.

Dr. Guangjun Liu was awarded the Canada Research Chair in Control Systems and Robotics (Tier 2) as well as the FEAS Research Excellence award. His work focuses on the mechanisms that connect the central hardware of a machine and the person using it and has applications across many industries. Robotics, which is the second component of his work, has direct applications in aerospace, and is partially funded by the Canadian Space Agency. Dr. Liu came to Ryerson in 1999, after earning a PhD at U of T and working in private industry for a number of years.

NEW AEROSPACE GRAD PROGRAMS

In September 2007, Ryerson will offer PhD, MSc and MEng programs in Aerospace engineering, through the School of Graduate Studies and the Department of Aerospace Engineering. There will be three areas of research: Aerodynamics and Propulsion, Aerospace Structures and Aerospace Manufacturing, and Avionics and Aerospace Systems.

These new programs present an opportunity to conduct significant, internationally recognized research across key areas of importance to the aerospace community within Canada.

CANSAT SUCCESS

A team of fourth-year undergraduate students supervised by Dr. Krishna Kumar finished in first place in the 2006 CanSat Competition in Washington, DC. American, Canadian and Mexican students developed their own pop-can-sized satellites, from concept and design through to launch into a suborbital altitude. The competition was judged by the American Astronautical Society (AAS), NASA Goddard, NASA JPL and the Naval Research Laboratory. The team consisted of Aradhana Choudhuri, Mike Alger, Matthew Bruce, Nadine Auda, Gratuz Devanesan and Michael Tai.

SAE AERO WIN

The SAE Aero Design team, under the supervision of Dr. Jason Lassaline, had one of their best finishes this year. The team placed second in the "East" competition Technical Report and took 13th overall, making them the top-ranked Canadian team in the regular class.

The SAE (Society of Automotive Engineers) was founded in 1905 for engineers in transportation industries. The Aero Design competition challenges students from around the world to design, build and test a radio-controlled cargo-carrying aircraft.

RECOGNIZING FACULTY EXCELLENCE

Dr. Guangjun Liu, FEAS Research Excellence Award

feas.ca/chemeng/

CHEMICAL ENGINEERING

CHAIR: DR. ALI LOHI

LEADING-EDGE EQUIPMENT

Dr. Farhad Ein-Mozaffari, Dr. Ginette Turcotte, Dr. Ramdhane Dhib, Dr. Philip Chan and Dr. Derik Rousseau (Nutrition) were awarded a NSERC Research Tools and Instruments grant that funded a research grade rheometer; Dr. Ali Lohi and Dr. Simant Upreti were awarded a research grant to fund a high-pressure view cell.

REAL WORLD, HANDS-ON LEARNING

Department undergraduate laboratories were equipped with some new experimental setups including mass transfer and liquid diffusion coefficient measurement apparatus, mass transfer and gaseous diffusion coefficient measurement apparatus, a tubular reactor, and a continuous stirred tank reactor.

RECOGNIZING THE FUTURE

The Canadian Society for Chemical Engineering/Chemical Institute of Canada recognized undergraduate students Noel Jacob (Silver Medal) and David Simpson (Book Prize) for their academic achievements.

Danyang Wang and Qing Dong Wu, two undergraduate students in the Chemical Engineering Co-Op program, were awarded NSERC Undergraduate Student Research Awards, a competitive awards process that supports talented undergraduate students pursuing research in their chosen field.

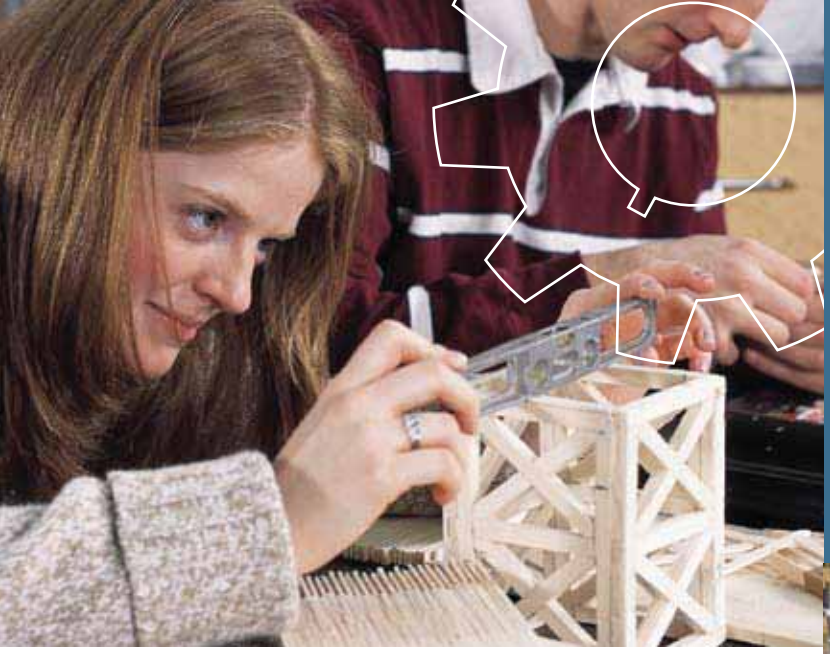
Two Doctoral students were welcomed into the Department's new PhD Program, one of them a recipient of an Ontario Graduate Student award.

RECOGNIZING FACULTY EXCELLENCE

Dr. Huu Doan, FEAS Teaching Excellence Award

NEW FACULTY

Dr. Yaser Dahman, Assistant Professor
Dr. Roshni Dutton, Associate Professor



civil.ryerson.ca

CIVIL ENGINEERING

CHAIR: DR. HESHAM MARZOUK



Dr. Hesham Marzouk joined Ryerson University in September as the Chair of the Civil Engineering Department. He came from Newfoundland's Memorial University, where he was also a departmental Chair, and where he earned high recognition for his teaching and research. Dr. Marzouk conducts research in the areas of concrete structures, high-strength concrete design, creep analysis, building design, offshore design, stress analysis and steel rehabilitation of columns. Dr. Marzouk has published extensively and is an active member of several engineering and research societies.

BRIDGING RESEARCH

The expertise of the Civil Engineering bridge infrastructure group, established by Dr. Khaled Sennah, is being recognized through expanded research activities. Research grants were awarded to Dr. Sennah, along with colleagues Dr. Reza Kiannoush and Dr.Bhagwant Persaud, by the Ontario Ministry of Transportation, the Canadian Institute of Health Research, Materials and Manufacturing Ontario and Trow Associates Inc., and through an international research collaboration, with Tanta University of Egypt.

CEMENTED SUCCESS

Ryerson Civil Engineering undergrad students placed fourth out of 12 at May's 12th National Concrete Canoe Competition in Sherbrooke, Quebec. Their lightweight mix made from shredded PVC fibres also earned them the Innovation Award. The 17-member team, with the technical assistance of Dominic Valle and Dr. Medhat Shehata spent six months designing and building their five-metre canoe, which was the fourth-year thesis project of three of the team members.

CONCRETE IDEAS

Undergrads Greg Bergland and Kyle Hampton won the second prize of the American Concrete Institute (ACI) International Project Competition for their study, "Exploration of cracking and leakage in reinforced concrete water retaining structures".

BUILDING BRIDGES

Undergrads Dominic Valle and David Cerullo, advised by Dr. Medhat Shehata and Neil Johnston, won second place in the 2006 National Bridge Building Competition in Montreal. Forty teams from 11 Canadian Universities and two technical colleges participated in the competition, which involved building bridges out of Popsicle sticks. Valle and Cerullo's bridge was able to withstand 400 kgs of weight.

CIVIL SOCIETIES

Dr. Songnian Li has been named the Canadian National Delegate to the Commission 3 of the International Federation of Surveyors (2007/2010). He has also been appointed as the Chair, WG IV/5, Technical Commission IV, and the International Society of Photogrammetry and Remote Sensing (2006/2008).

GREEN RESEARCH

Dr. James Li was invited by the Hong Kong Professional Green Building Council to make a keynote presentation on greenroofs at the Urban Climate and Urban Greenery Symposium on Dec 1, 2006. Dr. Li has received funding in Hong Kong to conduct field research studies of green roofs.

TECHNOLOGY TRANSFER

Drs. Mohamed Lachemi and Medhat Shehata conducted a successful field trial of an innovative Controlled Low-Strength Construction Material (CLSCM). The research team is now working to transfer the technology for long-term use in the Toronto and Montreal regions.

RECOGNIZING FACULTY EXCELLENCE

Dr. Khaled Sennah, Research Excellence Award

NEW FACULTY

Dr. Mustafa Berber, Assistant Professor
Dr. Hesham Marzouk, Professor and Chair

ee.ryerson.ca

ELECTRICAL AND COMPUTER ENGINEERING

CHAIR: DR. SRIDHAR KRISHNAN

NSERC IRC FIRST

Dr. Bin Wu has been appointed NSERC Industrial Research Chair in Power Electronics. Dr. Wu is one of the world leaders in the field of Power Electronics and heads up the Laboratory for Electric Motor Applications and Research (LEDAR). This appointment was founded upon a successful industrial collaboration with Rockwell Automation Inc. This is Ryerson's first NSERC Industrial Research Chair appointment.

CFI SUCCESS

Dr. Ling Guan and his team of 10 researchers have been awarded funding under the inaugural CFI New Initiatives Fund in support of infrastructure for the Centre for Interactive Multimedia Information Mining (see article on page 8).

RESEARCH WITH RELEVANCE

Dr. Dimitri Androutsos was awarded funding from Ontario Centres of Excellence-CITO Research Partnerships for his industrial partnership with IMAX in developing a new automated rotoscoping technique requiring much less user interaction; IMAX will use the results in motion picture production to provide the foundation for converting traditional 2D movies into 3D, an area that IMAX views as a growing entertainment sector.

WORKING WITH INDUSTRY

An NSERC Collaborative Research and Development (CRD) Grant was awarded to Dr. Xiao-Ping Zhang for his work with Epson Canada in developing intelligent technologies in visual media management, processing and applications in commercial environments including system framework, algorithms and prototype products of content-based image/video indexing, categorization, analysis and management for home media centre applications.

STUDENT EXCELLENCE

Emilijan Mirceski, a second-year Computer Engineering student, won first prize in the Innovative Design category of the 22nd annual Canadian Engineering Competition held in Montreal, for his project MiniRank, an online website ranking tool.

Riwa Karkoli, a fourth-year undergraduate student, won first prize in the national IEEE Canada Best Paper Contest for her project "A Plantar Pressure Distribution Analysis System for the Dynamic Moving Foot", supervised by Dr. Kristiina McConville.

NEW PIONEERS

Dr. Sri Krishnan, Chair of the Department, was awarded the New Pioneers in Science and Technology Award by the organization, Skills for Change, for his leading-edge research in diagnostic medical devices and other contributions in the field of biomedical engineering. These awards recognize outstanding contributions to the wider community made by immigrants and refugees.

RECOGNIZING FACULTY EXCELLENCE

Dr. Dimitri Androutsos, Ryerson University Teaching Excellence Award

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MECHANICAL AND INDUSTRIAL ENGINEERING

CHAIR: DR. LIPING FANG

CO-EDITORS OMID NIKOUBAKHTTAK AND JOHN SOLORZANO, AND ENGINEERING STUDENT ROBYN ELLIS DISPLAY THEIR FINAL PROJECTS, WHERE THEIR RESULTS WERE PUBLISHED IN THE FIRST STUDENT ENGINEERING JOURNAL IN NORTH AMERICA. ASSOCIATE PROFESSOR FARROKH SHARIFI, EDITOR OF THE JOURNAL, POSES WITH HIS STUDENTS.

SOLAR NETWORK

Faculty members Dr. David Naylor, Dr. Alan Fung and Dr. Bin Wu (Electrical and Computer Engineering) will lead Ryerson's participation in the NSERC Solar Buildings Research Network, a network of 24 researchers from 10 Canadian universities, other government agencies and a wide spectrum of private industry committed to developing buildings that approach net-zero energy consumption while being cost effective and comfortable.

STUDENT JOURNAL A FIRST

The first engineering student academic journal in North America was launched by a group of undergraduate students and faculty members led by Associate Professor Farokh Janabi-Sharifi. The first edition of the *Student Journal of Automation Robotics, Mechantronics and Manufacturing* featured papers published by Ryerson engineering students. The Journal editorial board, comprising engineering and computer science faculty and students from Ryerson, is expanding the editorial board to include members from other Canadian universities and invite submissions from other engineering departments at universities in North America (see photo).

HUMAN FACTORS AND ENGINEERING

Dr. Patrick Neumann (Principal Investigator), Dr. Saeed Zolfaghari (Co-Investigator), in collaboration with three other university researchers, received a three-year research grant of $209,497 from the Workplace Safety and Insurance Board Research Advisory Council investigating *Human Factors and Engineering Design: A Study of Professional Practices amongst Ergonomists and Engineers*.

WRITING ABOUT RESEARCH

Jon Bahen, a MASc student in the Department of Mechanical and Industrial Engineering, received the 1st prize in Ryerson's 2006 Graduate Studies Annual Writing Competition for his article, *The Hot Truth About Hip Replacement: The Design of Intramedullary Reaming Procedures to Reduce Elevated Temperatures during Orthopedic Surgery*. The focus of the competition is to encourage writing about research in a way that is interesting, engaging, and understandable.

DESIGN ENGINEERING SUCCESS

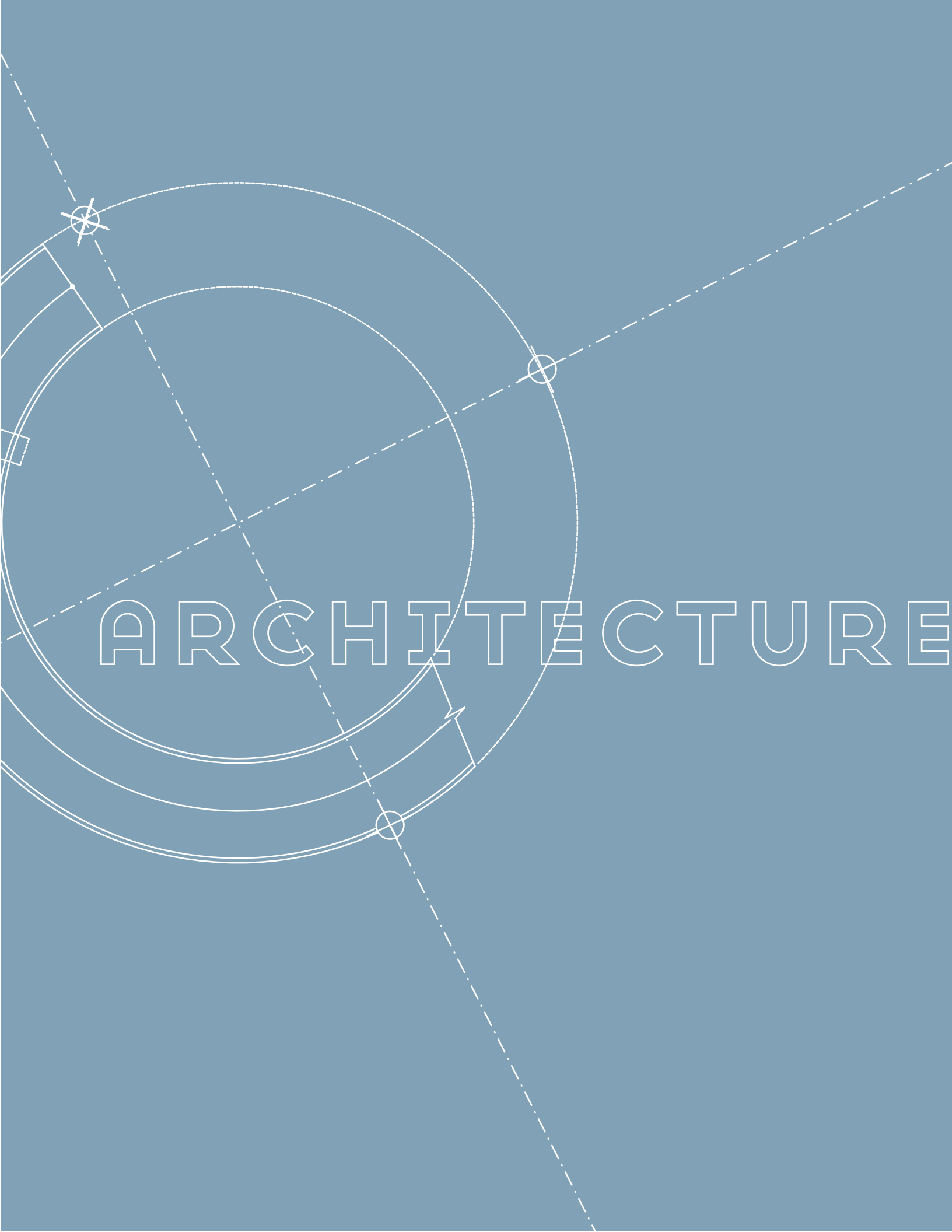
Fourth-year Industrial Engineering students Daniela Dighi, Janet Ho, Candice Langlois and Mohammad Kamali won first place in the design competition at the Institute of Industrial Engineers (IIE) Canada conference in Halifax. The competition, sponsored by Pratt & Whitney Canada, presented a real-time scenario to increase productivity of the PW600 blade line. Using the practical experience gained in their courses at Ryerson, the students were commended for their feasible, cost-effective solution.

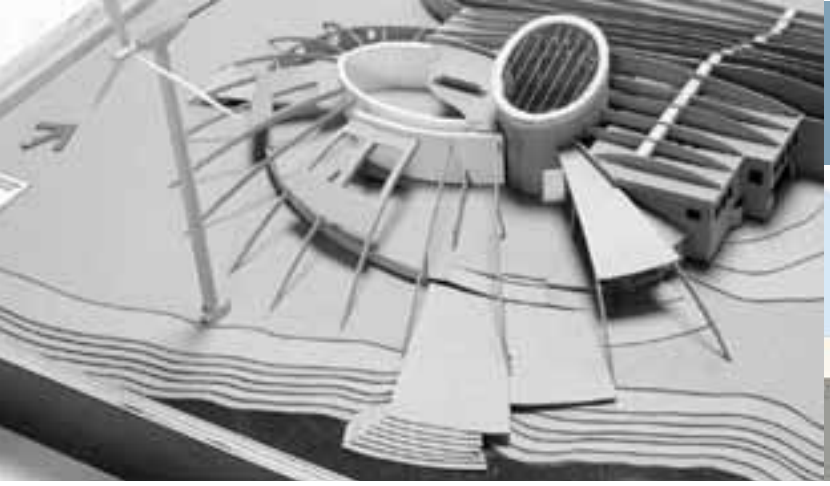
RECOGNIZING FACULTY EXCELLENCE

Dr. Liping Fang, FEAS Research Excellence Award
Dr. Frankie Stewart, FEAS Teaching Excellence Award

NEW FACULTY

Dr. Siyuan He, Assistant Professor
Dr. Wahab Mohamed Ismail, Assistant Professor
Dr. Kouroush Jenab, Assistant Professor
Dr. Krishnan Venkatakrishnan, Associate Professor


ARCHITECTURE



MASTERING ARCHITECTURE

CRITICAL PRACTICE IN ACTION

In September of 2007, Ryerson University will launch its Master of Architecture (MArch)—the first new professional program in architecture in Canada in over 30 years. But this program and its proponents are very clear that being an architect isn't just about designing buildings: Architecture today is all about discerning the broad impact on the many environments a project affects. And that is precisely how Architectural Science at Ryerson is evolving.

"Ours is not a program in classical or modern architecture," says George Kapelos, Chair of Ryerson's Department of Architectural Science, "it's a graduate program in critical practice." Kapelos describes this as a central philosophy to Ryerson's current architectural thought.

"'Critical practice' means using judgement or discernment," he says. "Architects need to go beyond the function of the structure; it means we are responsive to the built environment around us, to sustainability and our impact on the natural environment. It means we also consider lifecycles of building components and the overall lifecycle of the structure."

MArch candidates may take a wide range of courses, seminars and studios. But above all, the program sets out to engage in the areas of sustainability, impacts of new technologies and the urban condition.

Three studios are at the core of this. The "Studio in Critical Practice" examines complex design problems, their underlying architectural assumptions and practices, and the contexts in which they are created. The "Studio in Collaborative Practice" has students working in teams on a multifaceted building design project with input from specialized consultants and stakeholders.

The third studio, the "Intensive Research Studio and Seminar," has students working with an instructor on a specific area of research. Depending on the instructor and timing, this studio may be on campus, or may be set in locations in other parts of the world. In either case, the research topic will be first-hand and current, and the student will be expected to develop a professional and critical analysis.

"Studios are the crucible for learning," says Kapelos. "An architecture studio is as much about process as it is about focus. It's not just about issues in architecture, but also the culture of architecture." He adds, "We want our graduate students to ask and guide what kind of building should be built."

Consider a library or a museum: "Certainly we'll expect them to be able to handle the design expertly and professionally," Kapelos remarks, "but we also will expect them to consider how the resulting building will contribute to social, political, environmental and/or urban life in the 21st century."

On a practical level, Ryerson's strategy to meet architectural education demands goes hand-in-hand with the evolution of the profession. Once, an architect's office had highly specialized members—an office manager, a drafts person, etc.—while the architect held a more rarified concept-leadership and presentation role. Now there is an expectation that a sophisticated and well-rounded architect will have knowledge and skills in multiple facets of the discipline. This includes technical aspects such as a deep understanding of the individual components of a building and advanced technologies to design and test it before it is actually built.

"STUDIOS ARE THE CRUCIBLE FOR LEARNING. AN ARCHITECTURE STUDIO IS AS MUCH ABOUT PROCESS AS IT IS ABOUT FOCUS."

Ryerson has always been strong on the technical side, with undergraduates known for their ability to hit the ground running while keeping current with theory and practices. The Master of Architecture program builds on this foundation, with its studios, seminars and final thesis project.

Another key feature is Ryerson's location in the heart of the GTA. The University has a front-row seat on one of Canada's fastest-growing regions, complete with its changing cultural, intellectual, environmental and spatial demands. Moreover, Toronto is the home of many of the country's largest architectural firms, huge financial institutions and construction companies, and it's also where a large number of consultants in the building industry are based. As the site of Canada's newest architectural program, Toronto presents an ideal laboratory for exploring issues and testing ideas.

The Master of Architecture program is a natural step in the evolution of architectural studies in the city and the country. "We are forward-looking," says Kapelos. "We have faculty who are on the cutting edge of such things as sustainability, the reuse of materials, the relationship of architecture to culture and other areas where we can explore future concepts of architectural production, design, technology and realization."

And, with the foundation of Ryerson's undergraduate Bachelor of Architectural Science, plans are in the works to launch a Master in Building Science in the fall of 2008, followed by a Master in Project Management in the fall of 2009 (pending all government and regulatory bodies' approvals).

Clearly, Ryerson Architectural Science is critical and forward-thinking—in philosophy and in action.

ryerson.ca/arch

ARCHITECTURAL SCIENCE

CHAIR: GEORGE KAPELOS

PROFESSOR LIAO (SECOND FROM LEFT) AND STUDENT ENERGY AMBASSADORS

MASTER PLAN

Faculty and students from the Department of Architectural Science are contributing to Ryerson's Master Plan exercise, a comprehensive campus concept to meet the current and future physical space needs of the University.

Professor George Kapelos, Chair of the Department is a member of the Experts Advisory Committee, one of three main Master Plan Committees;

A Round Table, organized by Dr. Ian MacBurnie and moderated by Professors Colin Ripley and Marco Polo brought together over 200 people in exploring the university/city relationship;

Continuing Education Landscape Design students worked on a proposal for the redesign of Gould Street, a major University thoroughfare, under the guidance of Professor Shaun Gaullagher and Landscape Design Program Coordinator, Professor Margery Winkler.

Under the guidance of Dr. Ian MacBurnie, several third- and fourth-year Architectural Science students created a proposal for O'Keefe Lane, another key space.

ENERGY AMBASSADORS

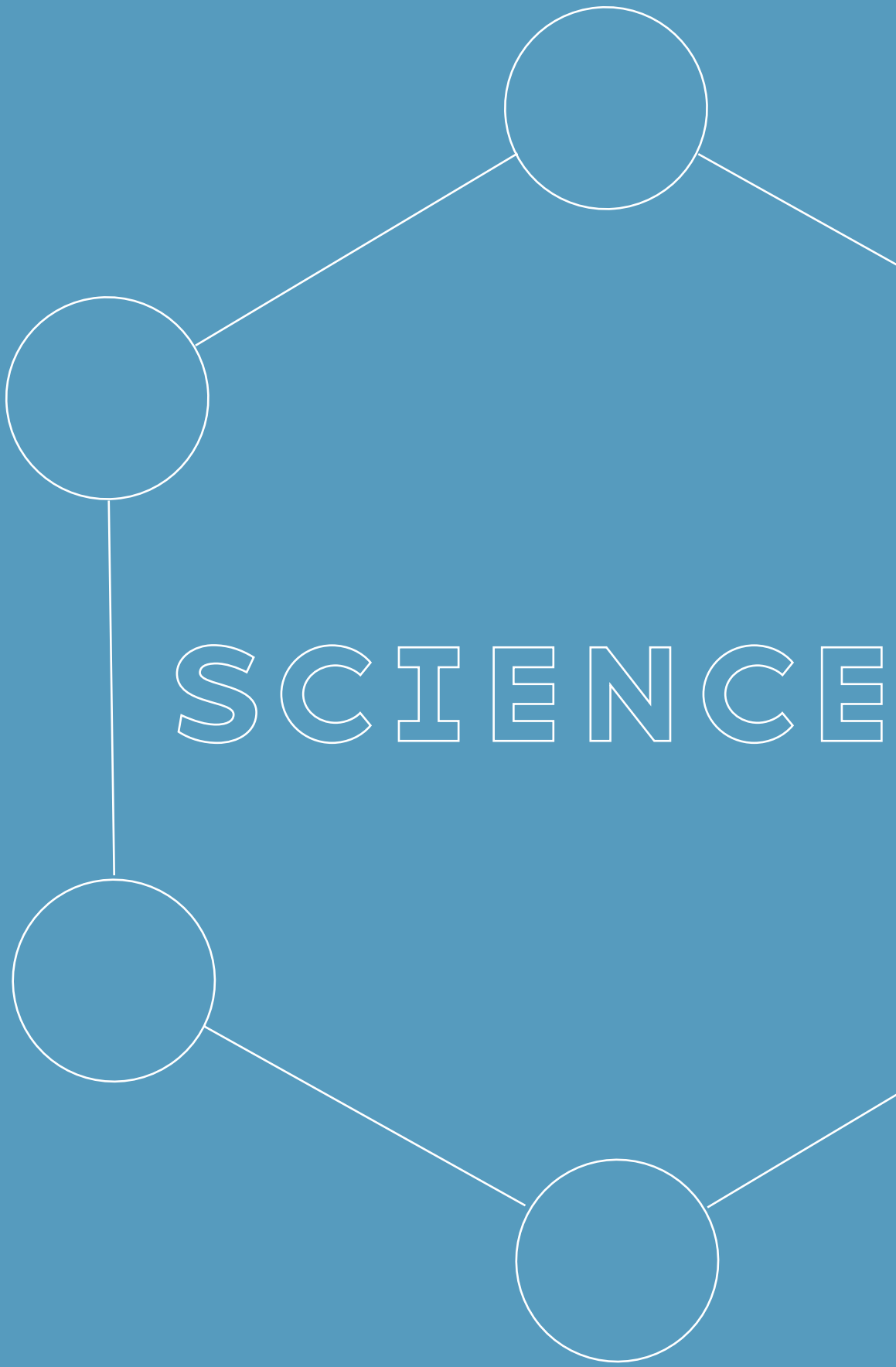
Architectural Science students working on three different projects related to building design and energy efficiency under the mentorship and supervision of Dr. Zaiyi Liao and Dr. Lian Zhao (Electrical and Computer Engineering) were named by Natural Resources Canada as winners of the 2006 Energy Ambassadors Competition.

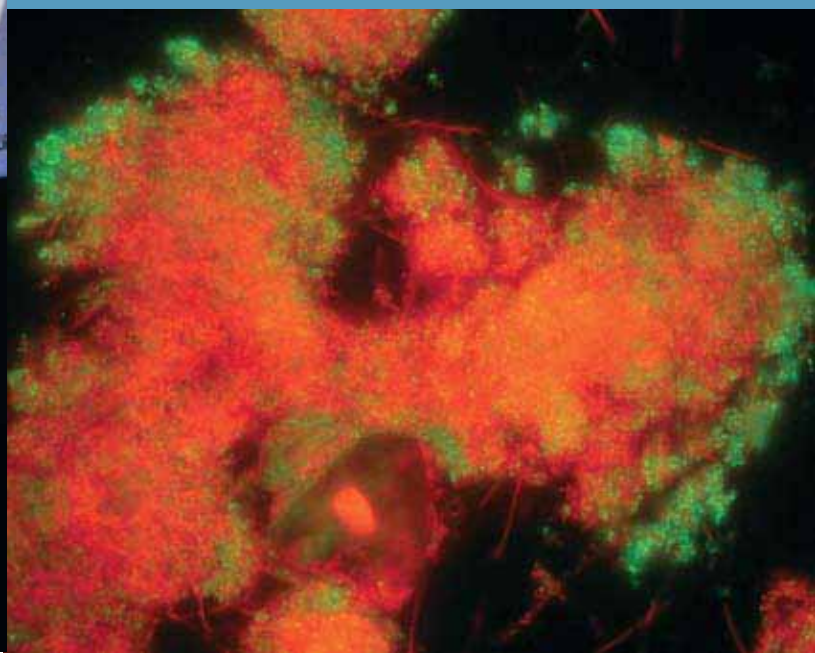
ACOUSTICS AND ARCHITECTURE

The Architectural Science building was amoung the sites of soundaXis, an international interdisciplinary festival, exploring the relationships between architecture, music and acoustics. Organizers included Professors Colin Ripley, Marco Polo, and Arthur Wriggleswort.

RECOGNIZING FACULTY EXCELLENCE

Professor Marco Polo, FEAS Research Excellence Award


SCIENCE



GREAT MINDS AND RAPID GROWTH

NEW SCIENCE FACULTY

Ryerson has evolved continuously since it was first established, with research and programs developing and growing all the time. Science, in particular, has been experiencing rapid advancement of late, with more programs at the undergraduate and graduates levels scheduled to launch over the next three years. This puts the University as a whole in a good strategic position, ready to mount new initiatives in emerging scientific and technological fields through teaching and research.

Our science departments have hired some stellar new assistant professors over the last few years. Many of these people were attracted to Ryerson by the momentum of our growth.

In the Department of Chemistry and Biology, Dr. Andrew Laursen first joined Ryerson in 2003, while Dr. Russell Viirre came in early 2006.

Laursen did his BA at Colgate University, completed his PhD at Notre Dame and did post-doctoral work at Notre Dame and Rutgers. He has a research focus on nitrogen and carbon biogeochemistry in lakes, which touches on areas such as the production of greenhouse gases, the impacts of invasive species, and other ways in which lakes respond to human activities.

Laursen is currently teaching first-year biology, as well as courses in anatomy and physiology for first- and second-year nursing, midwifery and medical physics students. Viirre earned his BSc and PhD from the University of Western Ontario and has a broad research interest in synthetic organic chemistry, with possible medical applications. Viirre looks at developing and using new chemical reactions to assemble complicated molecules from simpler ones. He is also looking at ways to synthesize substances isolated in trace amounts from natural sources and is studying the synthesis of molecules that behave like and can interact with DNA or RNA. Viirre teaches organic chemistry to second-year engineering students.

Both Laursen and Viirre chose to work at Ryerson because they saw a great deal of opportunity. “I saw a very dynamic and quickly growing program in chemistry and biology,” Laursen says.

Viirre agrees. “I was excited about the fact that Ryerson was expanding its chemistry programs,” he says. “To be able to get in on the ground level, and contribute to the way the Faculty will proceed for years to come is very exciting.”

"THERE ARE TREMENDOUS OPPORTUNITIES FOR BIOMEDICAL RESEARCH HERE. I AM GREATLY IMPRESSED WITH THE UNDERGRADUATE AND GRADUATE MEDICAL PHYSICS PROGRAMS."

The Department of Mathematics welcomed Dr. Marcos Escobar and Dr. Boza Tasic in 2006. Escobar's research touches on multidimensional probabilities, time series analysis, dependence structures, financial mathematics and biostatistics. He holds a BSc and an MSc from the University of Havana, and a PhD in mathematical finance from the University of Toronto. Before doing his PhD, however, Escobar worked in the pharmaceutical industry and retains an interest in probabilities and statistics for both fields.

Escobar is currently teaching a graduate course in statistics for the health sciences as well as second-year engineering statistics course. He was drawn to Ryerson in part because of the flexibility. "I think Ryerson is the right place to move in, and to build new durable things. They know I want to move in several directions simultaneously and are open to it." Escobar was also impressed with the pace of growth and the opportunities inherent in it. "They're creating a new undergrad and new graduate program in math, and I have been involved in both of them, not only creating courses but also designing the actual programs."

Tasic's BMath and MMath were earned at Serbia's Belgrade University and Novi Sad University, respectively, while his PhD is from the University of Waterloo. His research interests include universal algebra and partially ordered monoids (a type of algebra), which have applications in computer science.

Tasic was initially drawn to the University by other faculty. "A colleague of mine was at Ryerson and was very positive about the environment here," he says. Tasic now teaches calculus and algebra to first-year engineering students, and modern math to second-year science students.

Like Marcos Escobar, Boza Tasic likes Ryerson's growth strategies, which encourage faculty to contribute in broad ways. "Being involved at the beginning in the evolution of the math department is a great opportunity," he says. "I'm involved in setting standards, creating courses and helping map out what the department will look like over time."
Dr. Nancy Ford and Dr. Vladislav Toronov are two of the newest additions to the Department of Physics, both joining Ryerson in August of 2006.

Ford earned her BSc at the University of Waterloo, and her PhD at the University of Western Ontario and is currently teaching a physics course on waves and fields to first-year engineering students. Her research involves using non-invasive x-ray imaging technologies to take images of live tissue at different stages—for example, lungs inhaling and exhaling. Applications include being able to compare the function of an organ in a diseased state with one in a healthy state.

"The Master in Biomedical Physics program is brand new this year, and it's an opportunity to be involved from the beginning," says Ford. She adds that the downtown GTA location "opens up the possibilities for collaboration, within Ryerson and with hospitals and other universities in the region."

Toronov did his undergraduate work at the Moscow Engineering Physics Institute and earned his PhD at Russia's Saratov State University. Before coming to Ryerson in August of 2006, he was a Senior Research Scientist at the University of Illinois. Toronov is currently teaching first- and second-year courses in waves and fields, and photonics and optical devices.

Toronov's research focus is on biomedical optics and magnetic resonance imaging, and Ryerson is a good match for his interests. And he sees the same strengths in Ryerson as Ford does.

"There are tremendous opportunities for biomedical research here," says Toronov. "I am greatly impressed with the undergraduate and graduate medical physics programs," adding, "the Department is progressing in terms of new people and collaboration with other GTA hospitals and universities."

The message is clear: opportunity breeds more opportunity. Ryerson's science departments' good people and rapid growth are attracting other highly skilled people with great minds and a desire to grow with the University.

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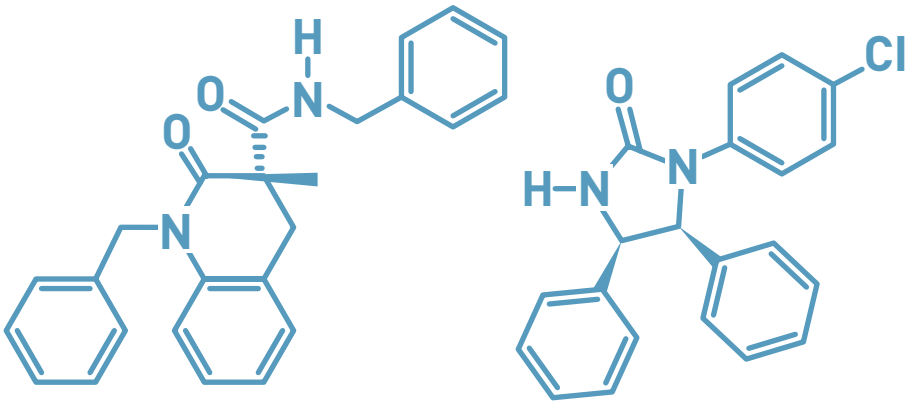
CHEMISTRY AND BIOLOGY

CHAIR: DR. CHRISTOPHER EVANS



WATER QUALITY

Ryerson scientists published a study on the effects zebra mussels have on lake water in Canada. The study, by Olga Bykova, a Masters student and lead author, and co-authors Dr. Andrew Laursen, Dr. Vadim Bostan, Joseph Bautista and Dr. Lynda McCarthy, found a relationship between the presence of zebra mussels, the increasing presence of blooms (cyanobacteria) in lakes and the effect on lake water, including the quality and taste of our drinking water.

EXPANDING RESEARCH FACILITIES

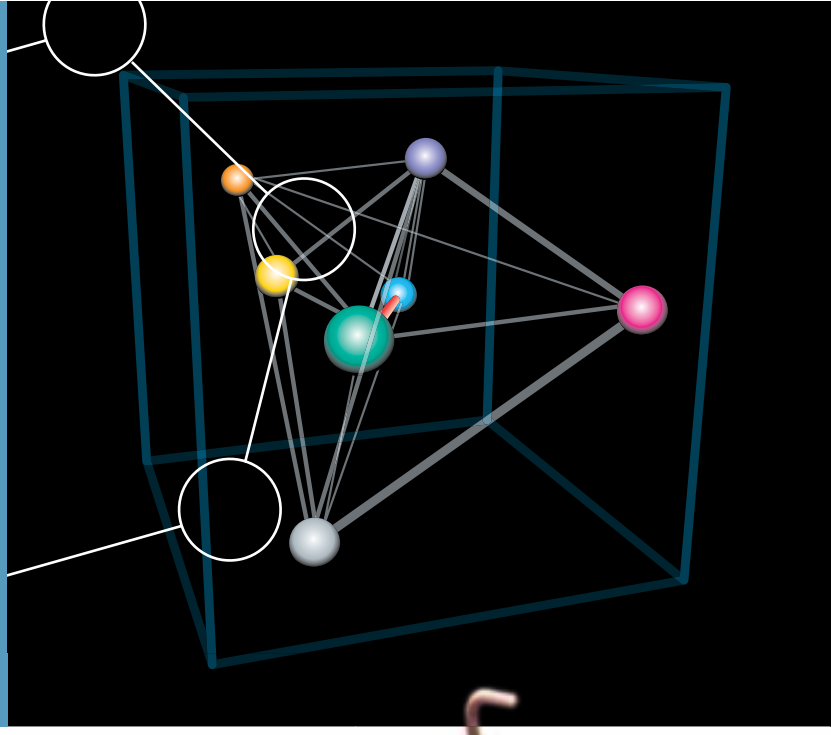
The growth of research laboratories is essential to the growth of graduate programs and the undergraduate student experience. The newly renovated Synthetic Organic Chemistry laboratory, under the supervision of Dr. Russ Viire, opened to students in the new MSc in Molecular Science program as well as undergraduates from Chemistry, Biology, and Chemical Engineering programs. The research is focused on the development of new chemical reactions to assemble complicated molecules more efficiently. The methods being developed enable them to synthesize molecules that were not previously possible to make. The research is of particular interest to the pharmaceutical industry in creating potential pharmaceutical lead compounds.

NEW FACULTY

Dr. Andrew Laursen, Assistant Professor
Dr. Russell Viirre, Assistant Professor

COMPUTER SCIENCE

CHAIR: DR. ALIREZA SADEGHIAN



ROBOTIC SEARCH-AND-RESCUE

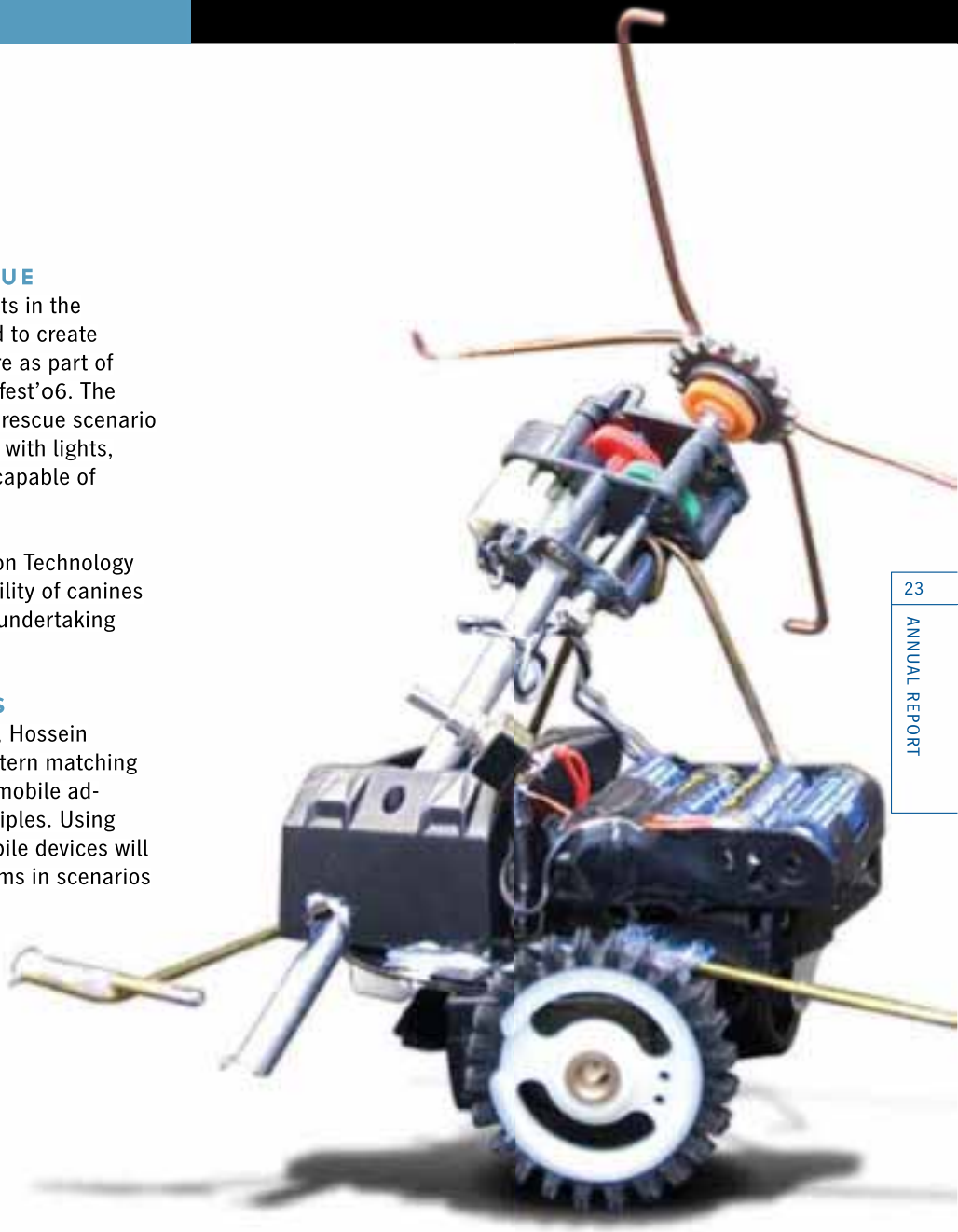
Led by Dr. Alex Ferworn, fourth-year students in the Human-Robot Interaction class were invited to create an installation at the Ontario Science Centre as part of the Robot Riot competition held during digifest'06. The project was based on an urban search-and-rescue scenario with tethered and wireless robots equipped with lights, on-board computation and video cameras capable of searching confined spaces.

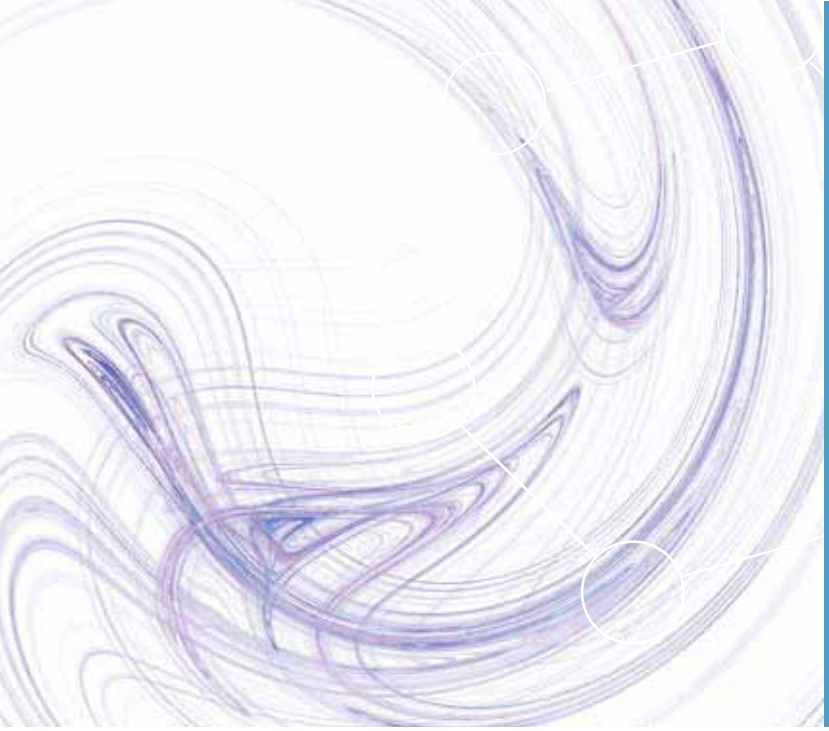
Related research using Canine Augmentation Technology is being developed to use the superior mobility of canines over difficult terrain, such as rubble, when undertaking search-and-rescue operations.

MOBILE CONTEXT AWARENESS

Dr. Alireza Sadeghian and doctoral student, Hossein Rahnama have developed an intelligent pattern matching software to facilitate context awareness in mobile ad-hoc networks using social networking principles. Using protocols such as Bluetooth and Wi-Fi, mobile devices will be used to enhance match making algorithms in scenarios such as autonomous mine detection and interpersonal communications. This initiative was placed 11th out of 100 in the international Simagine development contest and was featured in *Toronto Star* as a selected research.

A new graduate program, Masters in Computer Science, will be offered in 2007.





math.ryerson.ca

MATHEMATICS

CHAIR: DR. SEBASTIAN FERRANDO

INFRASTRUCTURE FOR LEARNING

Dr. Marcos Escobar, received a Research Tools and Innovation grant (jointly with Dr. Sebastian Ferrando and Dr. Katrin Rohlf, as co-applicants) to build a laboratory in Applied Mathematics; this laboratory will provide the computational resources for undergraduate and graduate students affiliated with the Mathematics Department. This state-of-the-art facility will provide a wide range of mathematical software that will complement the research areas of faculty members of the department.

The software will include simulations of multidimensional stochastic processes with applications to finance, software implementations of mathematical image processing tools and solvers for non-linear systems of partial differential equations with biomedical applications just to name a few.

MATHEMATICAL APPROACHES

Dr. Dejan Delic, along with his undergraduate NSERC research assistant Kelda-Anne Sholdice, has undertaken research in the area of computational complexity of constraint satisfaction problems for finite graphs. Dr. Delic has continued his collaboration with D. A. Bonato (Wilfrid Laurier University) and Dr. Changping Wang (Wilfrid Laurier University); they have studied graphs modelling the propagation of massive networks (with applications to the internet, and biological networks).

MATH PROGRAM EXPANDS

A new program, The Undergraduate Program in Mathematics and its Applications, has been approved by academic council and is set to start in September 2008. The program has been developed to expand the general science offerings at Ryerson; it offers students several opportunities to combine mathematics with other disciplines such as: Accounting, Biology, Chemistry, Computer Science, Economics, Finance and Physics.

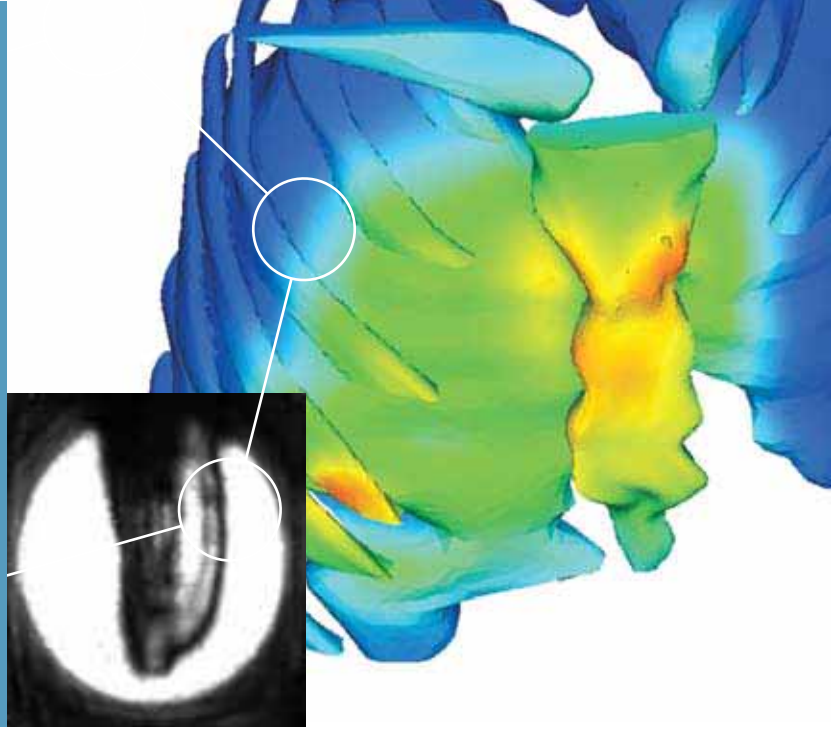
NEW FACULTY

Dr. Marcos Anil-Escobar, Assistant Professor
Dr. Boza Tasic, Assistant Professor

ryerson.ca/physics/

PHYSICS

CHAIR: DR. PEDRO GOLDMAN



LEADING-EDGE RESEARCH

Dr. Michael Kolios was awarded a CFI Leading Edge Fund grant for his project, "Advanced Biomedical Ultrasound Imaging and Spectroscopy Laboratory: From 1 to 1000MHz". The research team also includes Dr. Bill Whelan, and adjunct faculty Dr. Victor Yang and Dr. Gregory Czarnota.

NOVEL APPROACHES

Dr. Bill Whelan received a combined grant of $327,440 from NSERC and CIHR to pursue research into novel imaging modalities focusing on Optoacoustic Imaging, as part of his research on the potential of interstitial thermal therapy in disease detection and cancer therapy.

UNIQUE MASTERS PROGRAM

The Department of Physics welcomed students in to the new MSc in Biomedical Physics program. Building on a vibrant research environment in the Department and faculty who are world-renowned in their fields, 9 graduate students began work in this multi-disciplinary program. Through coursework and research, the students are exposed to a variety of disciplines including physics, engineering, computer science and biology in exploring novel physics-based technologies for the medical, biotechnology and environmental sectors.

RECOGNIZING FACULTY EXCELLENCE

Dr. Michael Kolios, FEAS Research Excellence Award

NEW FACULTY

Dr. Nancy Ford, Assistant Professor
Dr. Valadislav Toronov, Assistant Professor

FACULTY

AEROSPACE

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AREAS OF SPECIALIZATION

- Aeroelasticity
- Unsteady Aerodynamics
- Nonlinear Dynamics and Chaos
- Active Flutter Control

SELECTED ARTICLES/ PUBLICATIONS

H. Alighanbari and B.H.K Lee. 2003.Analysis of Nonlinear Aeroelastic Response, Journal of Aircraft, Vol. 40, No. 3, pp. 430-437.

H. Alighanbari. 2002. Aeroelastic Response of an Airfoil-Aileron Combination with Freeplay in Aileron Hinge, Journal of Aircraft, Vol. 39, No. 4, pp. 711-713.

H. Alighanbari and S.J. Price. 1996. The Post-Hopf-Bifurcation Response of an Airfoil in Incompressible Two-Dimensional Flow, Nonlinear Dynamics, Vol. 10, pp. 381-400.

Semler, H. Alighanbari and M.P. Paidoussis. 1998. A Physical Explanation of the Destabilizing Effect of Damping, Journal of Applied Mechanics, Vol. 65, pp. 642-648.

KAMRAN BEHDINAN

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AREAS OF SPECIALIZATION

- MDO of Aerospace/ Automotive Systems
- Experiment/Modeling of Structures
- Characterizing Nano-Materials (composites)
- Bio-Dynamics

SELECTED ARTICLES/ PUBLICATIONS

Narayan, K., Behdinan, K., and Vanderpol, P. 2006. An equivalent uniaxial fatigue stress model for analyzing landing gear fuse pin, Journal of Strength of Material, Vol. 38 (3), 278-288.

Honarmandi, P., Behdinan, K., and Zu, J. 2006. Reliability Based Design Optimization of Cantilever Beams Under Fatigue Constraint, Proceedings of the 47th AIAA/ASME/ASCE/AHS/ ASC Structures, Structural Dynamics, and Materials Conference, AIAA-2006-1941.

Ghaemi, H., Behdinan, K., and Spence, A. 2006. On the development of Compressible pseudo-strain energy density for Elastomers-Part I: Theory and Experiment, Journal of Materials Processing Technology, Vol. 178, 307-316.

Perez, E.R., Liu, H. T., and Behdinan, K. 2006. Simultaneous stabilization of linear plants using a multidisciplinary design optimization analogy, Proceedings of the AIAA Guidance, navigation, and Control Conference, AIAA 2006-6357, Keystone, CO, August 21-24.

Honarmandi, P., Behdinan, K., and Zu, J. 2005. Elasto-plastic fatigue life improvement of bolted joints and introducing FBI method, Journal of Mechanics Based Design of Structures and Machines, Vol. 33 (3-4), 311-331.

JOON CHUNG

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AREAS OF SPECIALIZATION

- Optimization of UAV system design
- Development Expert System and Data mining
- Air Cushion Vehicle Dynamics Simulation
- Compliant Air Bearing

SELECTED ARTICLES/ PUBLICATIONS

Chung, J. and Jung, Tae-Cheol.2004. Optimization of an Air Cushion Vehicle Bag and Finger Skirt using Genetic Algorithms, Aerospace Science and Technology Journal, Vol. 8/3, April, pp. 219-229.

Chung, J. 2002. Effects of Skirt Material Damping on Heave Dynamics of an Air Cushion Vehicle Bag and Finger Skirt, Canadian Aeronautics and Space Journal, Vol. 48, No. 3, September pp. 201-212.

Chung, J., Sullivan, P. A. 2000. Linear Heave Dynamics of an Air Cushion Vehicle Bag and Finger Skirt, Transaction of Japan Society for Aeronautical and Space Sciences, Vol. 43, No. 140, August pp. 39-45.

Chung, J., Sullivan, P. A., and Ma, T. 1999. Nonlinear Heave Dynamics of an Air Cushion Vehicle Bag and Finger Skirt, Journal of Ship Research, Vol. 43, No. 2, June pp. 79-94.

Sullivan, P. A. and Chung, J. 1999. UTIAS Research on the Dynamics of the Bag and Finger Air Cushion Vehicle Skir", Canadian Aeronautics and Space Journal, Vol. 45, No. 2, June pp. 194-205.

JOHN P. ENRIGHT

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AREAS OF SPECIALIZATION

- Spacecraft Sensor Design
- Systems Engineering
- Signal Processing
- Flight Software Engineering

SELECTED ARTICLES/ PUBLICATIONS

Godard, Enright, J. 2006. Optimization of a Sun-Sensor Illumination Pattern using Genetic Algorithms, IEEE Canadian Conference on Electrical and Computer Engineering, May 7-11, Ottawa, Ontario.

Enright, J. 2006. Communications Relays for Aitken's Basin Missions, CASI 13th Canadian Astronautics Conference, April 25-27, Montreal, QC.

Enright, J., Godard. 2006. Advanced Sun-Sensor Processing and Design for Super-Resolution Performance, Proc. of the IEEE Aerospace Conference, March 4-11, Big Sky, MT.

Hilstad, M., Enright, J., Saenz-Otero, A. 2004. The SPHERES Guest Scientist Program: Collaborative Science on the ISS, IEEE Aerospace Conference, March 6-13 Big Sky, MT.

ZOUHEIR FAWAZ

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AREAS OF SPECIALIZATION

- Aerospace Structures and Materials
- Advanced Composites

SELECTED ARTICLES/ PUBLICATIONS

Narayan, K., Behdinan, K. and Fawaz, Z. 2006. Potential fitting procedure for pure FCC and BCC metals using an engineering oriented embedded atom method, Journal of Materials Processing Technology, doi: 10.1016/ jmatprotec.2006.08. 018. http://dx.doi.org/10.1016/j. jmatprotec.2006.08.018

Fawaz, Z., Xu, Y.G., Behdinan, K. 2006. Optimum Design of Two-Component Composite Armours against High-Speed Impact, Composite Structures, 73/3 pp. 253-262.

Fawaz, Z., Xu, Y.G., Behdinan, K. 2005. Hybrid Evolutionary Algorithm and Application to Structural Optimization, Journal of the International Society of Structural and Multidisciplinary Optimization. Vol. 30, # 3, pp. 219-226.

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Loncaric, S., Greatrix, D., and Fawaz, Z. 2004. Star-Grain Rocket Motor—Non-Steady Internal Ballistics, Aerospace Science and Technology, Vol. 8, pp. 47-55.

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AREAS OF SPECIALIZATION

- Propulsion system performance
- Internal flows
- Vehicle flight dynamics
- Flight vehicle design

SELECTED ARTICLES/ PUBLICATIONS

Greatrix, D.R. 2006. Predicted Nonsteady Internal Ballistics of Cylindrical-Grain Motor, AIAA/ASME/SAE/ASEE 42nd Joint Propulsion Conference, AIAA Paper No. 2006-4427, Sacramento, July 9-12.

Greatrix, D.R. 2006. Model for Prediction of Negative and Positive Erosive Burning, AIAA/ASME/SAE/ASEE 42nd Joint Propulsion Conference, AIAA Paper No. 2006-5112, Sacramento, July 9-12.

Greatrix, D.R. and Karpynczyk, J. 2005. Rocket Vehicle Design for Small Payload Delivery to Orbit, Canadian Aeronautics & Space Journal, Vol. 51, No. 3, Sept., pp. 123-131.

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Solanki, N., Greatrix, D.R. and Gottlieb, J.J. 2001. Externally Generated Pressure Pulse in Rocket Chamber, Canadian Aeronautics & Space Journal, Vol. 47, No. 4, Dec., pp. 345-355.

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AREAS OF SPECIALIZATION

- Finite Element Methods (FEM) and Mesh Reduction techniques
- Fixed and Rotary-Wing Dynamics, Stability and Vibrations
- Structural Health Monitoring (SHM) of Metallic/Composite Airframes
- Fluid-Structure Interaction (FSI)

SELECTED ARTICLES/ PUBLICATIONS

Hashemi, S. M., Roach A. 2006. A Dynamic Finite Element For Vibration Analysis of Wire Ropes, Asian Journal of Civil Engineering (AJSE), 7(5), pp. 499-512.

Hashemi, S. M., Golnaraghi, M.F., Patla, Aftab E. 2004. Tuned Vibration Absorber (TVA) for Suppression of Rest Tremor in Parkinson's Diseases, Medical and Biological Engineering & Computing. 42 (1), pp. 61-70.

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Hashemi, S. M., Richard, M.J. 2001. Natural Frequency of Uniform Rotating Cantilever Beams with Coriolis Effects. ASME Journal of Vibration and Acoustics. 123(4), pp. 444-455.

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AREAS OF SPECIALIZATION

- Gas turbine blade cooling
- Thermal management in aerospace systems
- Flow induced vibration
- Jet flows

SELECTED ARTICLES/ PUBLICATIONS

E. Galvis, B. A. Jubran, J. Xi, K. Behdinan, and Z. Fawaz. 2006. Comparative Study of Turbulence Models in Predicting the Thermal and Hydrodynamic Characteristics of a Micro Heat Exchanger, 9th AIAA/ASME Joint Thermophysics and Heat Transfer Conference, San Francisco, Paper # AIAA-2006-3806, June 5 – 8.

B. A. Jubran , Y. H. Zurigat, and M. F. A. Goosen, 2005. Drag Reducing Agents in Multiphase Flow Pipelines: Recent Trends and Future Needs, J. Petroleum Science and Technology, Vol. 23, No. 11-12.

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Azzi, and B. A. Jubran. 2003. Numerical Modeling of Film Cooling from Short Length Stream-Wise Injection Holes, Heat and Mass Transfer, Vol. 39 No. 4, pp. 345-353.

Azzi, M. Abidat and B.A. Jubran, and Theodoridis, G. S. 2001. Film cooling predictions of simple and compound angle injection from one and two staggered rows, J. Numerical Heat Transfer, Part A, 40, pp. 273-294.

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AREAS OF SPECIALIZATION

- Spacecraft Dynamics and Control
- Orbit and Attitude Control
- Formation Flying
- Micro-, Pico- and Femto-satellites
- MEMS and Nano-technologies

SELECTED ARTICLES/ PUBLICATIONS

Kumar, K. D. 2006. A Review on Dynamics and Control of Non-Electrodynamic Tethered Satellite Systems, AIAA Journal of Spacecraft and Rockets, Vol. 43, No. 4, pp. 705-720.

Kumar, K. D., Bang, H. C., and Tahk, M. J. 2006. Novel Attitude Control Approach for Satellites in Elliptic Orbits Using Solar Radiation Pressure, Acta Astronautica, Vol. 59, No. 6, pp. 462-473.

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AREAS OF SPECIALIZATION

- Computational Fluid Dynamics (CFD)
- Aerodynamic Optimization
- Numerical Algorithms
- Mesh Generation
- Turbulence Modelling

SELECTED ARTICLES/ PUBLICATIONS

Lassaline, J.V. 2006. Optimal Multistage Relaxation Coefficients for Multigrid Solvers. CFD JOURNAL, Vol. 15, No. 1, April.

Lassaline, J.V., Zingg, D.W. 2003. An Investigation of Directional-Coarsening And Line-Implicit Smoothing Applied to Agglomeration Multigrid. AIAA Paper 2003-3435, AIAA.

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Manzano, L.M., Lassaline, J.V., Zingg, D.W. 2002. A Newton-Krylov Algorithm for the Compressible Inviscid Aerodynamic Flows Using Unstructured Grids. CFD 2002, CFD Society of Canada.

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AREAS OF SPECIALIZATION

- Robot control
- Modular and reconfigurable robot
- Control systems
- Aerospace systems
- Actuators and sensors

SELECTED ARTICLES/ PUBLICATIONS

Zhang, Y., Liu, G. and Hesselbach, J. 2006. On Development of a Rotary-Linear Actuator Using Piezoelectric Translators, IEEE/ASME Transactions on Mechatronics, Vol. 11, No. 5, pp. 647-650, October.

Liu, G., Bao, G., Lam, C. and Jiang, J. 2005. A Master-Slave Approach to Aircraft Engine Bleed Flow Sharing Control, IEEE Transactions on Control Systems Technology, Vol. 13, No. 6, pp. 1100-1106.

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AREAS OF SPECIALIZATION

- Flexible Structure Dynamics
- Damping and Viscoelastic Material Modeling
- Spacecraft Attitude Control
- Applied Space Vision and Motion Estimation

SELECTED ARTICLES/ PUBLICATIONS

D. J. McTavish and K. Davidson. 2006. Practical Large-Motion Modeling of Geometrically Complex Flexible Vehicles: A Consistent-Mass Standard-FEM Based, All Terms Included Formulation, Proceedings of the 47th AIAA/ASME/ASCE/ AHS/ASC Structures, Structural Dynamics, and Materials Conference, Newport, Rhode Island, May 1-4.

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T. Armour and D. J. McTavish. 2004. ASDV—A Virtual-Reality Tool for Multi-Object Flexible Structural Dynamics Visualization, Proceedings of CSME Forum, London, Ontario, June 1-4.

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AREAS OF SPECIALIZATION

- Computer Vision
- Computational Geometry
- Robotics
- Rigid Body Dynamics

SELECTED ARTICLES/ PUBLICATIONS

K. Shahid, G. Okouneva. 2006. Intelligent LIDAR Scanning Region Selection for Satellite Pose Estimation. Accepted to Computer Vision and Image Understanding, June.

G. Okouneva, K. Behdinan, K. Shahid. Optimal Target Placement Strategy for Improved Pose Estimation Accuracy. The Canadian Aeronautics Space Journal, vol.52, no.2 pp. 69-74.

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AREAS OF SPECIALIZATION

- Fibre metal laminates
- Composite materials
- Laser welding
- Laser consolidation
- Smart structures

SELECTED ARTICLES/ PUBLICATIONS

Xiao, M., Poon, C., Wanjara, P., Jahazi, M., Fawaz, Z., and Krimbalis, P. 2006. Optimization of Nd:YAG Laser Welding Process for Inconel 718 Alloy, Proceedings of International Conference of Aerospace Materials, 2006 Beijing International Materials Week (2006BIMW), Beijing, China, June 25-30.

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AREAS OF SPECIALIZATION

- Short pulsed laser nano/ micromachining
- Laser material interaction
- Fabrication of micro-electromechanical systems
- Fabrication of microelectronics

SELECTED ARTICLES/ PUBLICATIONS

K. Venkatakrisnan and B. Tan. 2006. Interconnection via drilling using radially polarized laser beam, J. Micromech. Microeng., 16:2603-2607.

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AREAS OF SPECIALIZATION

- Computational Fluid Dynamics
- High-speed gas dynamics
- Aerodynamics
- Wind Energy

SELECTED ARTICLES/ PUBLICATIONS

P.C. Walsh, W.H. Leong. 2004. Effectiveness of Several Turbulence Models in Natural Convection, Int. Jour. of Numerical Methods for Heat and Fluid Flow, Vol. 14, No. 5 & 6, Aug., pp. 633-648.

P.C. Walsh, R. Tahir, S. Molder. 2003. Viscosity Correction for the Busemann Hypersonic Air Inlet, Canadian Aeronautics and Space Jour., Vol. 49, No. 1, March pp. 11-17.

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AREAS OF SPECIALIZATION

- Manufacturing
- Automation
- Robotics

SELECTED ARTICLES/ PUBLICATIONS

Wang, L., Xi, F., and Zhang, D. 2006. A Parallel Robotic Attachment and its Remote Manipulation, International Journal of Robotics and Computer-Integrated Manufacturing, No. 22, pp. 515-525.

Xu, Y., and Xi, F. 2006. A Real-time Method for Solving the Forward Kinematics of a Tripod with Fixed-Length Legs, ASME Journal of Manufacturing Science and Engineering, Feb. Vol. 128, pp. 204-238.

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for Automated Polishing, International Journal of Machine Tools & Manufacture, Vol. 46, pp. 424-435.

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Zhou, C., Xi, F., and Mechefske, C. 2006. Modeling and Analysis of a Fully Flexible Tripod with Sliding Legs, ASME Journal of Mechanical Design, March, pp. 403-412

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AREAS OF SPECIALIZATION

- Inverse Design of Turbomachinery blades
- Fluid-Structure Interaction
- Kinematic Descriptions of Vortical Flow

SELECTED ARTICLES/ PUBLICATIONS

Yokota, J.W., and Medd,A.J. 2001. Shock-Fitting a Transonic Cascade Solution into an Inverse Design Technique, AIAA Journal of Propulsion, Vol. 17, No. 5.

Yokota, J.W., and Bekele,S.A. 2001. Simulating the Nonlinear Dynamics of an Elastic Cable, AIAA Journal, Vol. 39, no. 3, pp. 504-510.

Yokota, J.W. 1998. A Kinematic Velocity Decomposition of Stratified Flow, International Journal of Computational Fluid Dynamics, Vol. 9, pp. 121-135.

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Yokota, J.W. 1997. Potential/ complex-lamellar descriptions of incompressible viscous flow, Physics of Fluids, Vol. 9, No. 8, pp. 2264-2272, August.

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AREAS OF SPECIALIZATION

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- Form

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AREAS OF SPECIALIZATION

- Green roofing
- Performance and rehabilitation of buildings and durability of building envelope components
- Value engineering, life cycle costing, decision theory and building economic modeling
- Visualization of building envelope details
- Technology and teaching

SELECTED ARTICLES/ PUBLICATIONS

Doshi, H., Currie, B. A., Lawlor, G., Wieditz, I. 2005. Green Roof Policy Guidelines for Municipalities, Report for Canada Mortgage and Housing Corporation (CMHC), Ottawa, Ontario, October.

Doshi H., Banting, D., Li, J., Missios, P., Currie, B. A. 2005. Report on the Environmental Benefits and Costs of Green Roof Technology for the City of Toronto, Peer reviewed public document, Ryerson, Toronto, Ontario, October 31.

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Doshi H. 2004. Constructing an inventory of materials at risk from air pollution damage in Canada, Proceedings of the CIB World Congress, Toronto, Ontario, May 1.

Doshi H. 2001. On-Line Distance Education in Building Science—A Review of Current State of Art and Case Study, the Conference on Building Science and Technology, Toronto, Ontario, February.

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AREAS OF SPECIALIZATION

- History and theory of architecture
- Conservation & preservation
- Architecture education

SELECTED ARTICLES/ PUBLICATIONS

Etkind, M., and Shafrir, U. 2004. Quality of Knowledge Media Design for Instruction Must be Evaluated by the Resultant Pedagogical Outcomes. Presentation in Knowledge Media Design Institute, University of Toronto, January.

Invited participation in CANARIE Workshop 'E-learning in the E-economy: E-learning research and development needs'. Vancouver, January, 2004.

Etkind, M., Sareetan, K., and Shafrir, U. 2003. Meaning Equivalence Reusable Learning Objects (ME/RLO) for Deep Comprehension: Evaluative implementations in architecture, English, math and science. Presentation in McGraw-Hill/Ryerson Teaching and Learning, Ryerson University, November.

Etkind, M., and O'Brien M. 2003. ME/RLO: Language of Canadian Architecture. CNICE —Canadian Network for Inclusive Cultural Exchange, Heritage Canada, Report #1, December.

Etkind, M., and O'Brien M. 2003. ME/RLO: Roots of Canadian Architecture. CNICE —Canadian Network for Inclusive Cultural Exchange, Heritage Canada, Report #1, December.

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AREAS OF SPECIALIZATION

- Sustainable Construction
- Thermal mass in buildings
- Recycling and reuse
- Low energy design
- Prefabrication and sustainability

SELECTED ARTICLES/ PUBLICATIONS

Gorgolewski, M. 2005. The development of a simplified U-value calculation method for twin skin metal cladding systems, Architectural Science Review, March.

Gorgolewski, M.T. 2005. Learning how buildings work is crucial to better green design, submitted to the Journal of Green Building, v1 pp. 19-28, December.

Gorgolewski, M.T. 2005. The potential for prefabrication in UK housing to improve sustainability, Chapter 12 in Smart and Sustainable Built Environments edited by Yang, J, Brandon, P.S. & Sidwell, A.C., Blackwell Publishing, May.

Gorgolewski, M.T., Grubb, P.J. & Lawson, R.M. 2001. Modular Construction using Light Steel Framing–Design of Residential Buildings, Steel Construction Institute, SCI publication, p. 302.

Gorgolewski, M.T. 2005. Understanding how buildings evolve, Sustainable Buildings 05 conference, Tokyo, September.

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AREAS OF SPECIALIZATION

- Performance evaluation
- Building envelope
- Residential buildings
- Assessment tools

SELECTED ARTICLES/ PUBLICATIONS

Horvat, M. and P. Fazio. 2005. Comparative Assessment of Existing Certification Programs and Assessment Tools Performance Evaluation of Residential Buildings, Architectural Science Review Journal, University of Sydney, Sydney, Australia, 48.1, 69-80.

Horvat, M. and P. Fazio. 2004. Protocol and Assessment Tool for Performance Evaluation of Light-Frame Building Envelopes, CIB World Building Congress 2004—proceedings, Toronto, May 1-7, 2004, IRC/ NRCC, Ottawa, ON.

Horvat, M. and P. Fazio. 2003. Performance Evaluation Protocol for Full-Scale Wood-Frame Building Envelopes, Architectural Engineering 2003 Conference: Building Integration Solutions—proceedings, ed. by: M. Liu and K. Parfitt, Austin, Texas, 17-20 September 2003, ASCE, Reston, VA.

Horvat M., P. Fazio, and L. Poliquin. 2002. Durability in Housing: a Review of Quality Certification Programs and Recommendations, report prepared for Société d'habitation du Québec, Forintek Canada Corp., Eastern Division, Ste-Foy, Canada.

Horvat, M., P. Fazio, L. Poliquin and F. Robichaud. 2001. Survey of Canadian Prefabricated Building Industry—Findings, International Conference on Building Envelope Systems and Technologies (ICBEST) 2001—proceedings, Ottawa, 27-29 June, 2001, IRC/NRCC, Ottawa, ON.

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AREAS OF SPECIALIZATION

- Post-war housing in Canada
- Skin Cancer prevention through Design
- Contemporary Theory, Architecture, Landscape and Urbanism
- Phenomenology

SELECTED ARTICLES/ PUBLICATIONS

"A Modern Vision" in Toronto Modern/Architecture 1945 – 1965, Coach House Press (Toronto), 2002.

"Introduction," "The Constructed Landscape," "Picture," and "Afterword" in Course Studies – Tracking Ontario's Thames: An Exploration of the River, pp. 7-11, 28-58, and 97-99, Museum London, November 2001.

"Learning Experience," Canadian Architect, November 2001, pp. 24-29.

"Collegial Think Tank," Canadian Architect, February 2001, pp. 20-25.

"Less is More/Rem Koolhaas' Manifesto Wins at Downsview," Competitions Magazine, Fall 2000.

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AREAS OF SPECIALIZATION

- Project Management
- Building Economics
- Value Engineering
- Organizational Design and Performance
- Dynamic Systems Modelling

SELECTED ARTICLES/ PUBLICATIONS

Katsanis, C.J. 2005. The Dynamics of Structure and Strategy in AEC Firms: Towards an Amplification of Performance. INTERSYMP-2005. 17th International Conference on Systems Research, Informatics and Cybernetics. Symposium on Systems Research in the Architecture, Engineering and Construction (AEC) of Built Environments. Baden-Baden, Germany, pp. 49-53.

Katsanis, C.J. 2005. Modeling of Design and Planning Phase Variables and their Impact on Construction Productivity. 33rd CSCE Annual General Conference of the Canadian Society for Civil Engineering. June 2-4, Toronto, ON, pp. GC-377-1 to 8.

Katsanis, C.J., B. Dimitrijevic and C. Davidson. (Editors) 2004. Proceedings – Annual Meeting of CIB W 102. Ryerson University, Toronto. April 29-30.

Katsanis, C.J. 2004. Archetypal Network Organizaztions: The Case of the AEC Industry 2004 Specialty Conference on Leadership and Management in Conbstrcution. Hilton Head, S.C. March 24-26, pp. 180-189.

Katsanis, C.J. 2003. System Dynamics Modeling for a Decision Support System for Assessing Construction Productivity. in: CSCE 2003, 5th Construction Specialty Conference, Moncton, New Brunswick, June 4-7, pp. COG-310-1 to 10.

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AREAS OF SPECIALIZATION

- Architectural theory and history
- Eighteenth century Brazilian architecture
- Creativity and the design process in architecture

SELECTED ARTICLES/ PUBLICATIONS

June Komisar. 2003. The Laws of the Indies versus Town Typology in Eighteenth-Century Brazil: Settlement patterns in Vila Rica and Mariana. In The Planned City?: Proceedings of the International Seminar on Urban Form in Trani, Italy, July, by ISUF.

June Komisar. 2001 The African Influence on Colonial Architecture in Minas Gerais, Brazil. Proceedings of Transcultural Architecture in Latin America, by University of London, London, November.

June Komisar. 2001. The Architecture of Colonial Ouro Preto, Brazil. In Initiative for Architectural Research: 2001 International Poster Session Selected Projects, Washington, DC: Associated Collegiate Schools of Architecture, 2001. Presented at the Associated Collegiate Schools of Architecture Annual Meeting, March.

June Komisar. 1998. Curitiba, Hope for the Future? in Dimensions.

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AREAS OF SPECIALIZATION

- Digital Architecture and Design
- Architectural Preservation and Conservation
- Practice Management

SELECTED ARTICLES/ PUBLICATIONS

Y.T. Leong. 2006. In the Shadow: A Critical Self-Analysis of A Canadian Architectural Practice, Presented at the Fachhochschule Frankfurt am Main Architecture lecture Series, Frankfurt am Main, Germany, May 4.

Y.T. Leong. 2005. Moderating Diversity: Digitalism as a Leveling Tool in a Culture of Chaos and Diversion, Presented at the North-East Quad Conference 2005: American Institute of Architecture Students Conference, Toronto, Ontario, November 5.

Y.T. Leong and G.E. Lasker, Eds., 2005. Architecture, Engineering and Construction of Built Environments: Proceedings of the Special Focus Symposium on Systems Research in the Architecture, Engineering and Construction (AEC) of Built Environments, 2005: International Institute for Advanced Studies in Systems Research and Cybernetics, Windsor, Ontario, Canada.

Y.T. Leong. 2005. Historic Districts: Making a Case from an Embodied Energy Point of View, 2005. Presented at the 17th International Conference on Systems Research, Informatics and Cybernetics, Baden-Baden, Germany, August 3.

Y.T. Leong. 2005. A Systems Language: Architecture, Engineering and Construction, 2005. Presented at the 17th International Conference on Systems Research, Informatics and Cybernetics, Baden-Baden, Germany, August 2.

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AREAS OF SPECIALIZATION

- Architectural design
- Design studio applications
- Systems approach
- Architecture and language
- Curriculum development

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AREAS OF SPECIALIZATION

- Building services engineering
- Building automation and building management systems
- Simulation of building systems (thermal modelling, fire and smoke modelling, FEM)
- Inferential sensors
- Fire safety

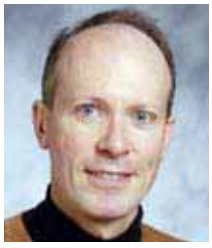
SELECTED ARTICLES/ PUBLICATIONS

Z. Liao and A. L. Dexter. 2005. An experimental study on an inferential control scheme for optimising the control of boilers in multi-zone heating systems, Energy and Buildings, Vol. 37(1), pp. 55-63.

Z. Liao, A. L. Dexter, and M. Swainson. 2004. On the control of heating systems in the UK, Buildings and Environment, Vol. 40 (3), pp. 343-351.

Z. Liao and A. L. Dexte.r 2004. A simplified physical model for estimating the average air temperature in multi-zone heating systems, Buildings and Environment, Vol. 39(9), pp. 1009-1018.

Z. Liao and A. L. Dexter. 2004. The potential for energy saving in heating systems through improving boiler controls, Energy and Buildings, Vol. 36(3).



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AREAS OF SPECIALIZATION

- Housing
- Urbanism
- Urban design
- Infrastructure
- Social equity

SELECTED ARTICLES/ PUBLICATIONS

Ian MacBurnie. 2003. (Just) Urbanism, Independent Press, Montréal, Québec.

Ian MacBurnie. 2003. Urban Design, Landscape Urbanism, and Environmental Design Education, Presented at the School of Architecture, University of Georgia, Athens, Georgia, Spring.

Ian MacBurnie. 2003. Urban Design and Architectural Education, Presented at the School of Architecture, University of Arkansas, Fayetteville, Arkansas, Spring.

Ian MacBurnie, ed. 2002. Vivre en Ville/Living in the City, Independent Press, Montréal, Québec.

Ian MacBurnie, ed. 2002. Re-inventing Downtown Big-D, Texas Tech University, College of Architecture, Lubbock, Texas.

GAYLE NICOLL

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AREAS OF SPECIALIZATION

- Cultural and behavioral influences on architectural design and technology
- Health promotion and the built environment
- Building code design and applications

SELECTED ARTICLES/ PUBLICATIONS

Zimring, C., Joseph, A. G. Nicoll, Tsepse, S. 2005. Influences of building design and site design on physical activity: research and intervention opportunities. American Journal of Preventive Medicine. Vol. 28, Issue 2, Supplement 2, pp. 186-193, February.

G. Nicoll. 2004. Analyzing Architecture, Morphological analysis in case study research, University of Nevada, Las Vegas, March.

G Nicoll, C. Zimring et al. 2004. Conference Paper: Influences of Building Design and Site Design on Physical Activity: Research and Intervention Opportunities, Active Living Research Conference, Del Mar California January 30.

G. Nicoll, C. Zimring et al. 2003. U.S Federal Courthouse Interactive Website, General Service Administration, secured website.

G. Nicoll. 2002. Cognitive Models in Design: The Las Vegas Casino, Georgia Institute of Technology. (Presentation ASC907, Ryerson University) Website.

PAUL S. H. POH

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AREAS OF SPECIALIZATION

- Construction project management
- Geotechnical engineering
- Wall building systems
- Continuing engineering education

SELECTED ARTICLES/ PUBLICATIONS

Poh, P. S. H. and Chen, J. 1998. The Singapore Buildable Design Appraisal System: A Preliminary Review of the Relationship Between Buildability, Site Productivity and Cost, Journal of Construction Management and Economics, Vol. 16, No. 6, UK, November, pp. 681-692.

Poh, P. S. H. et al. 1997. Construction Project Management Training For China's Engineers And Managers: Meeting Present and Future Demands, International Journal of Continuing Engineering Education and Life-long Learning, Vol. 7, No. 2, UK, pp. 203-211.

Poh, P. S. H. and Horner, R. M. W. 1996. Trade-Based Cost Significant Estimating Models: A Prospect In Southeast Asia?, Centre for Advanced Construction Studies Construction Bulletin, No. 12, Singapore, July, pp. 9-15.

Poh, P. S. H. and Horner, R. M. W. 1995 Cost-Significant Modelling–Its Potential For Use In South-East Asia, Journal of Engineering, Construction and Architectural Management, Vol. 2, No. 2, UK, June, pp. 121-139.

Poh, P. S. H. and Broms, B. B. 1995. Slope Stabilization Using Old Rubber Tires And Geotextiles, Journal of Performance of Constructed Facilities, ASCE, Vol. 9, No. 1, USA, February, pp. 76-79.

MARCO L. POLO

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AREAS OF SPECIALIZATION

- Criticism: Contemporary Canadian Architecture
- History: Canadian Architecture since 1945
- Regionalism in Canadian Architecture
- Cultural dimensions of Sustainability

SELECTED ARTICLES/ PUBLICATIONS

Polo, Marco, editor. 2006. The Prix de Rome in Architecture: A Retrospective. Toronto: Coach House Books

McMinn, John and Marco Polo. 2005. 41° to 66°: Regional Responses to Sustainable Architecture in Canada. Cambridge, Ontario: Cambridge Galleries.

McMinn, John and Marco Polo. 2005. "Sustainable Architecture as a Cultural Project" in Action for Sustainabilty, the proceedings of Sustainable Building 05, The 2005 World Sustainable Building Conference, Tokyo, Japan, September 2-29, 2005. Tokyo: SB05 Tokyo National Conference Board, pp. 453-4544.

Polo, Marco. 2005. "Mannered Modernism: Fifteen Years of Canadian Architecture" in Substance over Spectacle: Contemporary Canadian Architecture, Andrew Gruft, Editor. Vancouver: Arsenal Pulp Press, pp. 213-223.

Polo, Marco. 2004. "Prairies", "Beale- Sturgess Residence", "Bragg Creek House", "M House" and "Taylor Residence" in Living Spaces: 21 Contemporary Canadian Homes, John Ota, Editor. Cambridge, ON: Cambridge Galleries, pp. 20-29.

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AREAS OF SPECIALIZATION

- Acoustical modeling
- Noise control
- Architectural acoustics
- Aero-acoustics

SELECTED ARTICLES/ PUBLICATIONS

Peter Waudby-Smith and Ramani Ramakrishnan 2007. Wind Tunnel Resonances and Helmholtz Resonators. Canadian Acoustics Journal, Vol. 35 (1) 3-10.

Afarin Maleki, Ramani Ramakrishnan and Hitesh Doshi 2007. Impact of Sealant on the Water Shedding Performance of Metal Flashing. Proceedings of the 11th Canadian Building Science & Technology Conference, March 2007.

Ramakrishnan and Watson 1992. Design Curves for Rectangular Splitter Silencers. Applied Acoustics Journal, 35(1), 1-24.

Ramakrishnan and Watson 1991. Design Curves for Circular and Annular Duct Silencers. Noise Control Engineering Journal, 36(3), 107-120.

Ramani Ramakrishnan. 1980. Radiation in a Wall-Jet Flow Environment. Journal of Sound and Vibration 68(3), 389-405.

COLIN S. RIPLEY

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AREAS OF SPECIALIZATION

- Sound in Architectural Design
- Glass in Architecture
- Identity in the construction of place
- Architectural Representation

SELECTED ARTICLES/ PUBLICATIONS

Ripley, Colin. 2005. Emptiness and Landscape: National Identity in Canada's Centennial Projects. Journal of the Society for the Study of Architecture in Canada Vol. 30, No. 1): 37-45.

Ripley, Colin. 2005. Boundary Condition: The St. Jamestown Community Centre. Canadian Architect 50, No. 9: 53-56.

Paul Raff Studio and Colin Ripley. 2005. The Canadian Music Centre, Exhibition, Tyler School of Art, Temple University, October.

Ripley, Colin. 2004. Sound Architecture: Spatial Practices in Contemporary Music, in Changing Territories, New Cartographies: Proceedings of the 2004 Northeast Regional ACSA Conference, October, pp. 439-449.

Ripley, Colin. 2004. Stealing Home: Three Scenes Towards a Theory, in Archipelagos of the Americas: Proceedings of the Association of Collegiate Schools of Architecture 2004 Annual Meeting, ACSA Press, September, pp. 301-5.

FARNAZ SADEGHPOUR

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AREAS OF SPECIALIZATION

- Construction Site Layout and Planning
- Automation in Construction
- Computer Aided Design (CAD)
- 3D/4D Modelling in Construction
- Construction Management

SELECTEDARTICLES/ PUBLICATIONS

Farnaz Sadeghpour, Osama Moselhi, Sabah Alkass. 2005. Modeling the time Factor in Site Planning, 33rd CSCE Annual Conference, Toronto, Canada.

Farnaz Sadeghpour, Osama Moselhi, Sabah Alkass. 2004. A CAD-Based Model for Site Planning, Journal of Automation in Construction, Elsevier, 13(6), 701-715.

Farnaz Sadeghpour, Osama Moselhi, Sabah Alkass. 2004. Graphical Constraint Representation for Site Layout, 4th International Conference on Construction Applications of Virtual Reality, ConVR, Lisbon, Portugal.

Farnaz Sadeghpour, Osama Moselhi, Sabah Alkass. 2004. Geometric Reasoning for Site Space Analysis, Proc. of World Building Congress, CIB, Toronto, Canada.

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AREAS OF SPECIALIZATION

- Sustainable landscape design issues
- Educational gardens
- Prototypical outdoor environments

VERA STRAKA

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AREAS OF SPECIALIZATION

- Structural design
- Materials
- Durability
- Sustainability

SELECTED ARTICLES/ PUBLICATIONS

V. Straka. 2004. Sustainability in Construction Industry, Proceedings of the Annual Conference of the Canadian Society for Civil Engineers, Saskatoon, June. Paper also presented.

V. Straka, A. MacKenzie. 2004. The Iron Bridges of the 1800's, Proceedings of the Annual Conference of the Canadian Society for Civil Engineers, Saskatoon, June. Paper also presented.

V. Straka. 2004. Sustainability on Construction Sites, Proceedings of the World of Construction Management Conference, Toronto, May.

V. Straka. 2003. Bond of GFRPC ties in Mortar, Proceedings of the Annual Conference of the Canadian Society for Civil Engineers, Moncton, June. Paper was also presented.

V. Straka, A. MacKenzie. 2003. History of Masonry Construction in Canada, Proceedings of the Annual Conference of the Canadian Society for Civil Engineers, Moncton, June. Paper was also presented.

MARGERY R. WINKLER

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AREAS OF SPECIALIZATION

- Landscape Architecture Design & Management
- Design and Development of Healthy Children's Outdoor Open Space
- Rooftop Gardens,
- Community Outreach
- Traffic Calming

SELECTED ARTICLES/ PUBLICATIONS

Winkler, M.R., S. Macaulay. 2006. Active and adaptive sustainable environments for children's outdoor space. Design and Nature III Comparing Design in Nature with Science and Engineering. Brebbia, C.A, (Editor). WIT Press: UK. pp. 299-308.

AIA-COTE Ecology and Design. 2006. Ecological Literacy in Architectural Education Report and Proposal. Gould, K., L Hosey. P. 78.

A Breath of Fresh Air. Celebration of Nature and School Gardens. 2003. Houghton, E., Chapter 4: Touch The Earth. Landscape for Action. Sumach Press: Toronto. pp. 73-78

Transforming the Schoolyard. 2000. How local school community design and build their playground learning environment. Toronto district School Board, Design Committee Member.

STLHE Conference Society for Learning and Teaching in Higher Education. 1998. Mount Allison University, New Brunswick Conference Paper Title: Connecting All Voices of Learning.

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AREAS OF SPECIALIZATION

- Architectural design competitions
- Studio-based education
- Art and theory of architectural practice
- Industrial design applied to building science
- Issues of the spirit in architecture

SELECTED ARTICLES/ PUBLICATIONS

Wójs, Edward, "The Wall Competition", Open Ideas Competition at the Centre for Addiction and Mental Health, Toronto, Ontario, submitted 31 March 2003.

Wójs, Edward, "Dundas-Yonge Civic Square Project", Design Competition for Downtown Toronto, Submitted July, 1999.

Wójs, Edward, "Town of Canmore, Alberta, New Residential Prototype" Developer/Design proposal for new development submitted August 27, 1992. Design portion won first place.

Wójs, Edward, "Centre for Innovative Technology, State University and Polytechnic, Virginia" Idea Competition submitted May, 1987. Honorable Mention Award from jury.

Wójs, Edward, "Museum of Contemporary Arts and Crafts, New York", Project Competition submitted September, 1986. Peer reviewed competition winner (unbuilt).

ARTHUR WRIGGLESWORTH

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AREAS OF SPECIALIZATION

- Architectural design (Arts and culture, digital technologies)
- Architectural practice (Management, construction)

SELECTED ARTICLES/ PUBLICATIONS

Horiguchi, Tohru (ed.) 2001. "a-book" Atelier Hitoshi Abe, projet et realizations, 1993-2000, Editions Institut francais d'architecture, Paris, pp. 64. Design Collaborator.

Papadakis, Andreas C. (ed.) 1992 Free Spirit in Architecture, Omnibus Volume, Academy Group, London, pp. 65-75, ISBN 1-85490-129. (Coop Himmelblau) Design Team. Member

Fujii, Wayne N.T. (ed.) GA Houses 28; Project 1990, A.D.A Edita Tokyo Co., Tokyo, March 1990, pp 42-43, ISBN 87140-328-9. (Coop Himmelblau) Design Team Member.

Papadakis, Andreas C. (ed.) 1990. Architectural Design, Deconstruction III, Academy Group, London, pp. 73, 79, ISBN 1-85490-253-9. (Coop Himmelblau) Design Team. Member.

Nakamura, Toshio (ed.) 1989. Architecture and Urbanism, A+U Publishing Co., Tokyo, Number 226, July, pp. 29, 59, 73. (Coop Himmelblau) Design Team Member.

BARUCH ZONE

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AREAS OF SPECIALIZATION

- Design, methods and materials
- Affordable and SRO housing issues and strategies,
- Health and long-term care [transitional and long-term, community-based residential housing]

SELECTED ARTICLES/ PUBLICATIONS

B. Zone. 2003. National Post Design Exchange Awards, Judging of the Built Environment Category, Toronto, Ontario, October 24.

B. Zone. 2002. From Proposal to Implementation, Proceedings of the Toronto Acquired Brain Injury Network Conference, Toronto. Ontario, November 21-22.

B. Zone. 2003. Design Charrette and Forum Presentation, Presented at the Designing for Shade Conference, Ryerson University, June 6-8, and 12.

Y. T. Leong, M. Polo, E. Wojs, B. Zone. 2003. Managing and Delivering Studio Based Learning at the Department of Architectural Science, Presented at the Greet Conference, Ryerson University, May.

CHEMICAL ENGINEERING

MANUEL ALVAREZ CUENCA

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AREAS OF SPECIALIZATION

- Fluidization Engineering
- Advanced Bioreactors
- Water and Wastewater Treatment
- Design and Construction of Decentralized Wastewater Treatment Plants
- Design of Fixed Film Bioreactors

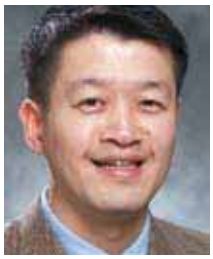
SELECTED ARTICLES/ PUBLICATIONS

Patent: Alvarez-Cuenca, Manuel, June 2005, The Active Biological Contactor (ABC): A Modular Wastewater Treatment System, Serial No. US60/688,713.

Ensuncho, L., M. Alvarez-Cuenca, and R.Legge. 2005. Removal of AqueousPhenol Using Immobilized Enzymes in a Bench and Pilot-scale Three-Phase Fluidized Bed Reactor. Bioprocesses and Biosystems Engineering, 27, 185-191.

Alvarez-Cuenca, M. 2004. Performance of an Active Biological Contactor (ABC) in the Treatment of Winery Wastewater. Water Conditioning and Purification, pp. 56-60.

Alvarez-Cuenca, M., E. Castilla, and N.Ghazi. 2004. Proceedings of the 3rd International Specialized Conference on Sustainable Viticulture and Winery Wastes Management. 159-166.



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AREAS OF SPECIALIZATION

- Computer simulation of phase separation in polymer systems
- Computer simulation of liquid crystalline materials
- Computer simulation of complex fluids/condensed soft matter

SELECTED ARTICLES/ PUBLICATIONS

P.K. Chan. 2006. Effect of Concentration Gradient on the Thermal-Induced Phase Separation Phenomenon in Polymer Solutions, Modelling and Simulation in Materials Science and Engineering, 14, 41-51.

T.L. Tran, P.K. Chan and D. Rousseau. 2005.Morphology Control in Symmetric Polymer Blends Using Spinodal Decomposition, Chemical Engineering Science, 60, 7153-7159.

K.-W.D. Lee, P.K. Chan and X. Feng. 2004. Morphology Development and Characterization of the Phase-Separated Structure Resulting from the Thermal-Induced Phase Separation Phenomenon in Polymer Solutions under a Temperature Gradient, Chemical Engineering Science, 59, 1491-1504.

G. Huang, P.K. Chan and M.R. Kamal. 2003. Phase Diagram for Liquid Crystalline Polymer/ Polycarbonate Blends, The Canadian Journal of Chemical Engineering, 81, 243-257.

P.K. Chan, K.-W.D. Lee and T.L. Tran. 2001. The Effects of Elongated Nematic Bipolar Droplet Orientation on the Performance of Polymer-Dispersed Liquid Crystal Films, Computational Materials Science, 21, 329–338.

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AREAS OF SPECIALIZATION

- Biomedical Field (Nanomaterials and Nanocomposites)
- Biotechnology
- Bioseparation
- Polymer Engineering
- Reaction Engineering

SELECTED ARTICLES/ PUBLICATIONS

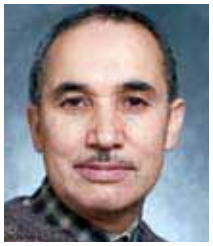
Puskas, J. E.; Dahman, Y; Margaritis, A; Cunningham, M. 2004. Novel Thymine—Functionalized Polystyrenes for Applications in Biotechnology. Adsorption of Model Proteins, Biomacromolecules, 5, 1412.

Puskas, J.; Chen,Y.; Dahman, Y. 2004. Polyisobutylene-Based Biomaterials, Journal of Polymer Science. Part A: Polymer Chemistry, 42, 3091.

Dahman, Y; Puskas, J. E.; Margaritis, A; Cunningham, M. 2003. Novel Thymine—Functionalized Polystyrenes for Applications in Biotechnology. Polymer Synthesis and Characterization, Macromolecules, 36(7), 2198.

Dahman, Y; Margaritis, A; Puskas, J. E.; Cunningham, M. 2002. Novel Functionalized Polymers, 22nd Canadian Biomaterials Society Proceeding—June, 2131.

Dahman, Y.; Puskas, J. E.; Margaritis, A.; Merali, Z.; Cunningham, M. 2002. Synthesis and Characterization of Functionalized Polystyrene, Polymer Preprints (ACS, Division of Polymer Chemistry), 43(1), 262.



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AREAS OF SPECIALIZATION

- Kinetic studies of polymerizations: Impact of initiators on polymer synthesis and end-products.
- Modelling and Process Control: Modelling of infrared dryers and bulk/emulsion (co)polymer reactors; MPC control; Drying of polymers; Fluidized-bed polymer reactors.
- Optimization and ANN: Process optimization and ANN (Artificial Neural Networks) process modelling.

SELECTED ARTICLES/ PUBLICATIONS

Scorah, M.J., R. Dhib and A. Penlidis. 2006. Modelling of free radical polymerization of styrene and methyl methacrylate by a tetrafunctional initiator, Chemical Engineering Science 61, 4827-4859.

Abukhalifa H., R. Dhib and M. Fayed. 2005. Model Predictive Control of an Infrared-Convective Dryer, Journal of Drying Technology, V23, 1-15.

Scorah, M.J., R. Dhib and A. Penlidis. 2005. Use of a Novel Tetrafunctional Initiator in the Free Radical Homo- and Copolymerization of Styrene, Methyl Methacylate and alpha-Methyl Styrene. Journal of Macromolecular Science Part A—Pure and Applied Chemistry, A42 (4), 403-426.

Dhib R. and N. Al-Nidawy. 2002. Modelling of Free Radical Polymerization of Ethylene Using Difunctional Initiators, Chemical Engineering Science, V57, 2735-2746.

Dhib, R., Thérien N. and A.D. Broadbent. 1999. Model-based Multivariable Control of the Drying of a Thin Sheet of Fibers in a Continuous Infrared Dryer, Can. J.Chem. Eng. V77, A7 (6), 1055-1064.

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AREAS OF SPECIALIZATION

- Mass transfer in a packed bed and its application in air pollution control
- Industrial wastewater treatment (biologically and electrochemically)

SELECTED ARTICLES/ PUBLICATIONS

Dang-Vu, T., H.D. Doan and A. Lohi. 2006. Local Mass Transfer in A Packed Bed: Experiments and Model, Ind. Eng. Chem. Res. 45(03), pp. 1097-1104.

Dang-Vu, T., H.D. Doan, A. Lohi and Y. Zhu. 2006. A New Liquid Distribution Factor and Local Mass Transfer Coefficient in a Random Packed Bed, The Chem. Eng. Journal 123, pp. 81-91.

Doan, H.D., J. Wu and R. Mitzakov. 2006. Combined Electrochemical and Biological Treatment of Wastewater using Porous Electrodes, J. Chem. Technol. Biotechnol. 81(8), pp. 1398-1408.

Doan, H.D., S. Upreti and A. Lohi. 2005. Gas to Liquid Mass Transfer, The Encyclopedia of Chemical Processing, Marcel Dekker, Inc., New York, 1163-1174.

Doan, H. D., J. Wu, E. Boithi and M. Storrar. 2003. Treatment of Wastewater Using a Combined Biological and Electrochemical Technique, J. Chem. Technol. Biotechnol. 78(6), pp. 632-641.

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AREAS OF SPECIALIZATION

- Biopharmaceutical Production
- Macro Scale Metabolic Engineering: impact of the metabolome on the proteome through manipulation of the environment
- Metabolic Flux Analysis (MFA)
- Mammalian Cell Culture Optimization: nutritional profiling (NP), multivariate statistical analysis (MVSA), dynamic programming

SELECTED ARTICLES/ PUBLICATIONS

Dutton R.L., Fox J.S. 2006. Robotic processing in barrier–isolator environments; a life cycle cost approach, Pharmaceutical Engineering, 26, No. 5, 36-48.

Dutton R.L., Scharer J.M., (editors), 2006. Advanced Technologies in

Biopharmaceutical Processing, Blackwell Professional Publishing, Ames, Iowa, USA, 336p. Dutton R.L., Sheffrin G. 2004. A project approach for the design, construction, and validation of multi-functional multi-product pilot scale biopharmaceutical facilities, BioProcessing Journal, 3, No. 6, 27-34.

Dutton R.L., Scharer J.M., Moo-Young M. 1999. Hybridoma growth and productivity: effects of conditioned medium and of inoculum size, Cytotechnology, 29, 1-10.

Dutton R.L., Scharer J.M., Moo-Young M. 1998. Descriptive parameter evaluation in mammalian cell culture, Cytotechnology, 26, 139-152.

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AREAS OF SPECIALIZATION

- Mixing of Fluids with Complex Rheology
- Flow Visualization (Tomography and Ultrasonic Velocimetry)
- Computational Fluid Mixing
- Non-Newtonian Fluid Dynamics
- Dynamic Modeling and Identification

SELECTED ARTICLES / PUBLICATIONS

Ford, C., F. Ein-Mozaffari, C.P.J. Bennington and F. Taghipour. 2006. Simulation of Mixing Dynamics in Agitated Pulp Stock Chests Using CFD, AIChE Journal, 52(10), pp. 3562-3569.

Upreti, S.R., F. Ein-Mozaffari. 2006. Identification of Dynamic Characterization Parameters of Agitated Pulp Chests Using a Hybrid Genetic Algorithm", Chemical Engineering Research and Design, 84, pp. 221-230.

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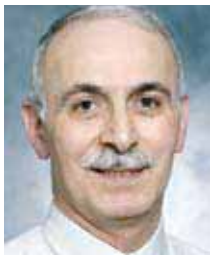

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AREAS OF SPECIALIZATION

- Simulation, Modelling, and Artificial Neural Network
- Waste Utilization, Air Pollution, Wastewater Treatment
- Oil and Gas, VAPEX
- Reaction Engineering, Supercritical Fluids
- Transport Processes

SELECTED ARTICLES / PUBLICATIONS

Dang-Vu T., Doan H. D., Lohi A. 2006. Local Mass Transfer in a Packed Bed: Experiments and Model, Industrial & Engineering Chemistry Research, 45(3), pp. 1097-1104.

Cuenca M. A., Vezuli J., Lohi A., Upreti S. R. 2006. Anaerobic Biodegradation of Diesel Fuel Contaminated Wastewater in a Fluidized Bed Reactor, Bioprocess and Biosystems Engineering, 29(1), pp. 29-37.

Kapadia R. A., Upreti S. R., Lohi A., Chatzis I. 2006. Determination of Gas Dispersion in Vapor Extraction of Heavy Oil and Bitumen, Journal of Petroleum Science and Engineering, 51(3-4), pp. 214-222.

Sundaram B. S., Upreti S. R., Lohi A. 2006. Optimal Policies for BMA Polymerization in Nonisothermal Batch Reactor, Journal of Applied Polymer Science, 102(3), pp. 2799-2809.

Zahedi G., Jahanmiri A., Elkamel A., Lohi A. 2006. Mathematical Modeling, Simulation, and Experimental Verification of CO_2 Removal in a Turbulent Contact Absorber, Chemical Engineering & Technology, 29(8), pp. 916-922.

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AREAS OF SPECIALIZATION

- Environmental/biochemical engineering
- Water and wastewater treatment
- Advanced oxidation technologies
- Integration of Advanced Oxidation Technologies and Biological Processes for Water and Wastewater Treatment
- Modelling of gas bubbling in a liquid steel flow channel

SELECTED ARTICLES / PUBLICATIONS

G.B. Tabrizi and M. Mehrvar. 2006. Pilot-plant study for the photochemical treatment of

aqueous linear alkylbenzene sulfonate, Separation and Purification Technology, 49(2), 115-121.

A. Asadi and M. Mehrvar. 2006. Degradation of aqueous methyl tert-butyl ether by photochemical, biological, and their combined processes, International Journal of Photoenergy, Vol 2006, Article ID 19790, pp. 1-7.

M. Mehrvar and G.B. Tabrizi. 2006. Combined photochemical and biological processes for the treatment of linear alkylbenzene sulfonate in water, Journal of Environmental Science and Health: Part A: Toxic/ Hazardous Substances & Environmental Engineering, A41 (4), 581-597.

A. Hamad, A. Aidan, M. Fayed, and M. Mehrvar. 2005. Experimental investigation of phenolic wastewater treatment using combined activated carbon and UV processes, Clean Technologies and Environmental Policy, 7 (3), 177-181.

J.P. Rogler, L.J. Heaslip, M. Mehrvar. 2005. Physical modelling of inclusion removal in a tundish by gas bubbling, Canadian Metallurgical Quarterly, 44 (3), 357-368.

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AREAS OF SPECIALIZATION

- Biofuel Ethanol
- Microbial Enzyme Kinetics in Cellulose Degradation
- Recombinant Lignocelllulases in Transgenic Plants
- Mixing of Concentrated Fiber Suspensions
- Anaerobic Digestion of Agricultural and Food Wastes

SELECTED ARTICLES/ PUBLICATIONS

Bae, H.-J., Turcotte, G., Soo Kim, Y., Vezina, L.-P. and Laberge, S. 2004. Cel6B of Thermobifidus fusca and a Cel5-CBM6 of Ruminococcus albus containing a cellulose binding site show synergistic effect on hydrolysis of native plant cellulose. FEMS Microbiol. Lett. 233(2):325-331.

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Savoie, P., de Halleux, D., Belkacemi, K. and Turcotte, G. 1998. Enzymatic hydrolysis of forage and straw pretreated with ammonia. Can. Agric. Eng. 40(3):207-212.

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AREAS OF SPECIALIZATION

- Optimal Control
- Experimental Determination of Diffusion in Polymers
- Dispersion in Vapour Extraction of Heavy Oils and Bitumen

SELECTED ARTICLES/ PUBLICATIONS

Upreti S.R., Ein-Mozaffari F. 2006. Identification of Dynamic Characterization Parameters of Agitated Pulp Chests Using Hybrid Genetic Algorithm, Chemical Engineering Research and Design, 84(A3), 221-230.

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Doan H.D., Upreti S., Lohi, A. 2006.Gas to Liquid Mass Transfer, A chapter in The Encyclopedia of Chemical Processing, Marcel Dekker Inc., New York, 1163–1174.
Upreti S.R., Sundaram B.S., Lohi A. 2005. Optimal Control Determination of MMA Polymerization in Non-Isothermal Batch Reactor Using Bifunctional Initiator, European Polymer Journal, 41(12), 2893-2908.

Upreti S.R. 2004. A New Robust Technique for Optimal Control of Chemical Engineering Processes, Computers and Chemical Engineering, 28, 1325-1336.

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AREAS OF SPECIALIZATION
- Wastewater Treatment
- Catalytic Ozonation
- Biomaterials
- Surface Modification of Polymers

SELECTED ARTICLES/ PUBLICATIONS

Wu, J., Doan H. and Cuenca, M. 2006. Investigation of gaseous ozone as an anti-fungal fumigant for stored wheat, J. Chem. Technol. Biotechnol. 81, 1288-1293.

Doan, H., Wu, J. and Mitzakov, R. 2006. Combined electrochemical and biological treatment of wastewater using porous electrodes, J. Chem. Technol. Biotechnol. 81, 1398-1408, 2006.

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Wu, J. and Doan, H. 2005. Disinfection of Recycled Red-Meat-Processing Wastewater by Ozone. J. Chem. Technol. Biotechnol. 80, 828-833.

Wu, J. 2005. Ozone Treatment. In Encyclopedia of Chemical Processing, Marcel Dekker, New York, NY, pp. 1993-2001.

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AREAS OF SPECIALIZATION:
- Environmental Biology
- Aquatic toxicology
- Aquatic food webs
- Water/Sediment interactions

SELECTED ARTICLES/ PUBLICATIONS

Bykova, O., A. Laursen, V. Bostan, J. Bautista, and L. McCarthy. 2006. Do zebra mussels (Dreissena polymorpha) alter lake water chemistry in a way that favours Microcystis growth? Science of the Total Environment Vol. 371:362-372.

Bostan, V. and Lissina, E. 2006. The impact of two fluoroquinolones on aquatic microbial communities. Abstract in: American Society of Limnology and Oceanography (ASLO) Summer Conference Proceedings, June, 2006, Victoria, BC.

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AREAS OF SPECIALIZATION
- Transcription Factors
- Biochemistry
- Molecular Virology
- HIV/AIDS

SELECTED ARTICLES/ PUBLICATIONS

Chen J, Malcom T, Estable MC, Roeder RG, Sadowski IJ. 2005. TFII-I regulates induction of chromosomally integrated human immunodeficiency virus type 1 long terminal repeat in cooperation with USF. J Virol. Apr;79(7):4396-406.

Mario Clemente Estable, Mojgan Naghavi, Hiroyuki Kato, Hua Xiao, Jun Qin & Robert G. Roeder. 2002. MCEF, the newest member of the AF4 family of transcription factors involved in leukemia, is a P-TEFb associated protein that can repress HIV-1. J. Biomedical Sciences,; 9(3): 234-245.

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AREAS OF SPECIALIZATION
- Molecularly imprinted polymers
- Host-guest systems
- Cyclodextrins
- Fluorescence spectroscopy
- Sensors

SELECTED ARTICLES/ PUBLICATIONS

S. Zohrehvand, C. H. Evans. 2005. 2-Naphthol-Containing b-Cyclodextrin-Epichlorohydrin Co-Polymers: Synthesis, Characterization and

Fluorescence Studies. Polymer International, 54, 744-753.

J. van Stam, L. Viaene, C.H. Evans. 2005. Tuning of the D–Therthiophene Radical Cation Coupling Reaction Using Mixed Micelles with Varying Charge Densities. ChemPhysChem, 6, 2428-2433.

S. Sau, R. Orprecio, B. Solanki, J. van Stam, C.H. Evans. 2004. Higher-Order Cyclodextrin Complexes: the Naphthalene System. J. Inclusion Phenom., 48, 173-180.

R. Orprecio, C.H. Evans. 2003. Polymer Immobilized Cyclodextrin Trapping of Model Organic Pollutants in Flowing Water. Journal of Applied Polymer Science, 90, 2103-2110.

C.H. Evans, M. Partyka, J. van Stam. 2000. Naphthalene Complexation by Beta–Cyclodextrin: Influence of Added Short-Chain Linear and Branched Alcohols. Journal of Inclusion Phenomena, 38, 381-396.

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AREAS OF SPECIALIZATION

- Biochemistry
- Cellular Microbiology
- Host-Pathogen Interactions
- Role of Stress In Virulence
- Lipid-Protein Interactions

SELECTED ARTICLES/ PUBLICATIONS

DeJesus, M., Urban, A., Marasigan, M. and D.E. Barnett Foster. 2005. Acid and Bile Salt Shock of Enteropathogenic Escherichia coli Enhances Epithelial Cell Adhesion and Alters Glycolipid/Phospholipid Binding. Journal of Infectious Diseases, 192(8): 1430-1440.

Y. Wu, B. Lau, S. Smith, K. Troyan, and D. E. Barnett Foster. 2004. Enteropathogenic Escherichia coli Infection Triggers Host Phospholipid Metabolism Perturbations. Infection and Immunity, 72(12): 6764-6772.

Abul-Milh, M., Wu, Y., Lau, B., Lingwood, C.A. and Barnett Foster, D.E. 2001. Induction of Epithelial Cell Death including Apoptosis by Enteropathogenic Escherichia coli Expressing Bundle-Forming Pili. Infection and Immunity 69(12): 7356-7364.

Khursigara, C., Abul-Milh, M., Lau, B., Giron, J.A., Lingwood, C.A. and Barnett Foster, D. E. 2001. Virulence Factor BFP has a binding specificity for phosphatidylethanolamine. Infection and Immunity 69(11): 6573-6579.

Barnett Foster, D.E., Abul-Milh, M., Huesca, M. and C.A. Lingwood. 2000. Enterohemorrhagic Escherichia coli induces Apoptosis which augments Bacterial Binding and Phosphatidylethanolamine Exposure on the Plasma Membrane Outer Leaflet. Infection and Immunity 68(6): 3108-3115.

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AREAS OF SPECIALIZATION

- Chemical education
- Materials chemistry
- Inorganic chemistry

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AREAS OF SPECIALIZATION

- Microbiology
- Molecular biotechnology
- Secondary wastewater treatment
- Bacterial diversity
- Nitrification

SELECTED ARTICLES/ PUBLICATIONS

Gilbride, K.A., D.Y. Lee and L. Beaudette. 2006. Molecular Techniques in Wastewater: Understanding microbial communities, detecting pathogens, and real time process control. J. Microbiol. Methods 66(1): 1-20.

Gilbride, K.A., A. Cesnik, J. Gawat, D. Frigon and R.R. Fulthorpe. 2006. Effect of Chemical and Physical Parameters on a Pulp Mill Biotreatment Bacterial Community. Wat. Res. 40: 775-787.

Petropoulos, P., and K.A. Gilbride. 2005. The Nitrification Rate in Activated Sludge Batch Reactors is Linked to Protozoan Grazing of the Bacterial Population. Can. J. Microbiol. 51: 791-799.

Gilbride, K.A. and R.R. Fulthorpe. 2004. A Survey of the Composition and Diversity of Bacterial Populations in Bleached Kraft Pulp Mill Treatment Systems, Canadian Journal of Microbiology. 50: 633-644.

Baker, C., R.R. Fulthorpe and K.A. Gilbride. 2003. Investigation of Microbial Communities in Pulp Mill Treatment Systems with DNA Fingerprinting Techniques, Water Quality Research Journal of Canada, 38: 227-242.

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AREAS OF SPECIALIZATION

- Physical/Analytical Chemistry
- Surfaces and Interfaces
- Photochemistry
- Raman Microscopy
- Thin Films

SELECTED ARTICLES/ PUBLICATIONS

M.T. Nickerson, J. Patel, D.V. Heyd, D. Rousseau, and A.T. Paulson. 2006. Kinetic and mechanistic considerations in the gelation of genipin-crosslinked gelatin, Int. J. Biol. Macromolecules. 39, 298-302.

D.V. Heyd and B. Au. 2005. Fluorescence development during 514-nm irradiation of catechol adsorbed on nanocyrstalline titanium dioxide. J. Photochem. Photobiol. A: Chem. 174(1), 62-70.

Erlet Kurti, D.V. Heyd, and R. Stephen Wylie. 2005. Raman microscopy for the quantitation of propiconazole in white spruce. Wood Sci. Technol. 39(8), 618-629.

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AREAS OF SPECIALIZATION

- Chemical education
- Organic chemistry
- Teaching methods
- Learning styles

SELECTED ARTICLES/ PUBLICATIONS

Kristi J. Humphreys, Anne E. Johnson, Kenneth D. Karlin, and Steven E. Rokita. 2002. Oxidative Strand Scission of Nucleic Acids by a Multinuclear Copper (II) Complex. J. Biol. Inorg. Chem. 7, 835-842.

Qibing Zhou, Praveen Pande, Anne E. Johnson, and Steven E. Rokita. 2001. Sequence-Specific Delivery of a Quinone Methide Intermediate to the Major Groove of DNA. Bioorg. Med. Chem. 9, 23347-2354.

Anne E. Johnson and Martin E. Tanner. 1998. Epimerization by Carbon-Carbon Bond Cleavage. L-Ribulose-5-Phosphate 4-Epimerase as a Masked Class II Aldolase. Biochemistry 37, 5746-5754.

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AREAS OF SPECIALIZATION

- Developmental biology
- Genetic screens on the microscopic nematode, C.elegans
- Pioneer axon guidance molecules involved in nervous system development
- Molecular biology, biochemistry, immunohistochemistry, and microscopy

SELECTED ARTICLES/ PUBLICATIONS

Killeen, M., Tong, J.F., Krizus, A., Steven, R., Scott, I., Pawson, A., and Culotti, J. 2002. UNC-5 Function Requires Phosphorylation of Cytoplasmic Tyrosine 482, but its UNC-40 Independent Functions also Require a Region Between the ZU-5 and Death Domains. Dev. Biol. 2002 Nov 15; 251: 348-66.

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Su, M. W., Merz, D. C., Killeen, M. T., Zhou, Y., Zheng, H., Kramer, J., Hedgecock, E. M. and Culotti, J. G. 2001. Regulation of the UNC-5 netrin receptor initiates the first reorientation of migrating distal tip cells in Caenorhabditis elegans. Development 127: 585-594.

Chan, S.S. Y., Zheng, H., Su, M. W., Wilk, R., Killeen, M. T., Hedgecock, E. M., and Culotti, J. G. 1996. UNC 40, a C. elegans homolog of DCC (deleted in colorectal cancer), is required in motile cells responding to UNC 6 netrin cues. Cell 87: 187 195.

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AREAS OF SPECIALIZATION

- Aquatic biology/ecosystem science
- Microbial ecology
- Ecotoxicology
- Analytical chemistry (GC, HPLC, MS)
- Statistical analysis/Modeling

SELECTED ARTICLES/ PUBLICATIONS

Bykova, O., A. Laursen, V. Bostan, J. Bautista, and L. McCarthy. 2006. Do zebra mussels (Dreissena polymorpha) alter lake water chemistry in a way that favours Microcystis? Science of the Total Environment 371: 362-372.

Laursen, A.E., and S.P. Seitzinger. 2005. Limitations to measuring riverine denitrification at the whole-reach scale: effects of channel geometry, wind velocity, sampling interval, and temperature and inputs of N2-enriched groundwater. Hydrobiologia 545:225-236.

Laursen, A.E., and S.P. Seitzinger. 2004. Diurnal patterns of denitrification, oxygen consumption and nitrous oxide production in rivers measured at the whole-reach scale. Freshwater Biology 49: 1448-1458.

Laursen, A.E., and S.P. Seitzinger. 2002. Measurement of denitrification in rivers: an integrated, whole reach approach. Hydrobiologia, 485:67-81.

Laursen, A.E., and S.P. Seitzinger. 2002. The role of denitrification in nitrogen removal and carbon mineralization in Mid-Atlantic Bight sediments. Continental Shelf Research, 22:1397-1416.

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AREAS OF SPECIALIZATION

- Environmental Biotechnology
- Wastewater Treatment
- Microbial Structures
- Bioflocculation
- Biofilms

SELECTED ARTICLES/ PUBLICATIONS

Liao, B., D.G., I.G. Droppo, G.G. Leppard and S.N. Liss. 2006. Effect of solids retention time on structure and characteristics of sludge flocs in sequencing batch reactors. Wat. Res. 40:2583-2591.

Zhang, Y., S.N. Liss and D.G. Allen. 2006. The effects of methanol in the biofiltration of dimethyl sulfide in inorganic biofilters. Biotechnol. Bioeng. 95:734-743.

Liu, J.R., C. Liu, E.A. Edwards and S.N. Liss. 2006. The effect of phosphorus limitation on microbial floc structure and gene expression in activated sludge. Wat. Sci. Technol. 54:247-255.

Droppo, I.G., S.N. Liss, D. Williams and G.G. Leppard. 2006. River Pathogen-Sediment Interactions: Importance for Policy Development on Safe Water Practices International Association of Hydrological Sciences (Red Book Series-Peer Reviewed), Sediment Dynamics and the Hydromorphology of Fluvial Systems, IAHS Publ. 306: 314-320.

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AREAS OF SPECIALIZATION

- Analytical chemistry
- Chemical speciation
- Sources, transport, transformation and fate of pollutants in the natural environment
- Separation techniques

SELECTED ARTICLES/ PUBLICATIONS

Mnique St. Denis, Xinjie Song, Julia Lu, Xinbin Feng. 2006. Atmospheric Gaseous elemental mercury in Downtown Toronto. Atmospheric Environment, 40, 4016-4024.

J.Y. Lu, W. H. Schroeder. 2004. Annual time-series of total filterable atmospheric mercury concentrations in the Arctic. Tellus, 56B, 213-222.

X. Feng, J. Y. Lu, D. C. Gregoire, Y. Hao, C. Banic, W.H. Schroeder. 2004. Analysis of inorganic mercury species associated with airborne particulate matter/aerosols: method development. Analytical and Bioanalytical Chemistry, 380: 683-689.

X. Feng, J. Y. Lu, Y. Hao, C. Banic, W. H. Schroeder. 2003. Evaluation and applications of a gaseous mercuric chloride source. Analytical and Bioanalytical Chemistry, 376, 1137-1140.

J. Y. Lu, W.H. Schroeder, L. A. Barrie, A. Steffen, E.H. Welch, K. Martin, W. L. Lockhart, R.V. Hunt, G. Boila and A. Richter. 2001. Magnification of atmospheric mercury deposition to polar regions in springtime: the link to tropospheric ozone depletion chemistry, Geophysical Research Letter, 28, 3219-3222.

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AREAS OF SPECIALIZATION

- Protein
- Biochemistry
- Blood
- Analytical
- Cell-Biology

SELECTED ARTICLES/ PUBLICATIONS

John Marshall, Andy Jankowski, Inga Kireeva, Lisa Barker, Mila Dumbrovsky, Weimin Zhu,Kellie Jacks, Leslee Ingratta, Jenny Bruin, Erika Kristensen and Rulin Zhang, Eric Stanton, MiyokoTakahashi and George Jackowski. 2004. Human Serum Proteins Pre-Separated by Electrophoresis or Chromatography followed by Tandem Mass Spectrometry. Journal of Proteome Research 3(3) 364-382.

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AREAS OF SPECIALIZATION

- Great Lakes pollution
- Industrial and municipal wastewater toxicology
- Land-application of biosolids
- Endocrine disruptors
- Stormwater facilities

SELECTED ARTICLES/ PUBLICATIONS

Bandelj, E., M.R. van den Heuvel, F.D.L. Leusch, N. Shannon, S. Taylor, and L.H. McCarthy. 2006. Determination of the androgenic potency of whole effluents using mosquitofish and trout bioassays. Aquatic Toxicology. 80:237-248.

Bostan, I.V., L.H. McCarthy, and S.N. Liss. 2005. Assessing the impact of land-applied biosolids from a thermomechanical (TMP) pulp mill to a suite of terrestrial and aquatic bioassay organisms under laboratory conditions. Waste Management. 25:89-100.

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McCarthy, L.H., I.V. Bostan, W. Choi, R. Ellis, K. Hardy, and S.N. Liss. 2004. Comparison of some studies assessing the androgenic potential of compounds in pulp mill and municipal effluents using the mosquitofish Gambusia affinis. In: D.L. Borton, T.J. Hall, R.S. Fisher, and J. Thomas (Eds.). Pulp and Paper Mill Effluent Environmental Fate and Effects. pp. 361-373.

McCarthy, L.H., K.R. Munkittrick, B.R. Blunt, G.J. Van Der Kraak, C.S. Wood, and J. Parrott. 2003. Steroid levels in goldfish exposed to pulp mill effluent. In: T.R. Stuthridge, M.R. van den Heuvel, N.A. Marvin, A.H. Slade, and J.S. Gifford (Eds). Environmental Impacts of Pulp and Paper Wastestreams. pp. 342-351.

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AREAS OF SPECIALIZATION

- Inorganic polymers
- Polymerization catalysts
- Dendrimers
- Skeletal substitution/ metathesis

SELECTED ARTICLES/ PUBLICATIONS

Z. Wang, A.R. McWilliams, C.E.B. Evans, X. Lu, S. Chung, M.A. Winnik, I. Manners, 2002. Covalent attachment of Ru-II phenanthroline complexes to polythionylphosphazenes: The development and evaluation of single-component polymeric oxygen sensors, Advanced Functional Materials, Vol. 12, No. 6-7, Jun, pp. 415-419.

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M.N. Nobis, A.R. McWilliams, O. Nuyken, I. Manners. 2000. Polymers with sulfur(VI)-nitrogen-phosphorus backbones: Synthesis, characterization, and properties of poly[(dialkylamino)thionylphosphazenes], Macromolecules, Vol. 33, No. 21, October pp. 7707-7712.

A.R. McWilliams, D. P. Gates, M. Edwards, L.M. Liable-Sands, I. Guzei, A.L. Rheingold, I. Manners. 2000. Reaction of the cyclic thionylphosphazene NSOCl[NPCl2](2) with halide abstraction agents: An ambient temperature ring-opening polymerization (ROP) route to poly(thionylphosphazene), Journal of the American Chemical Society, Vol. 122, No. 37, September, pp. 8848-8855.

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AREAS OF SPECIALIZATION

- Analytical chemistry
- Spectroscopy
- Chromatography

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AREAS OF SPECIALIZATION

- Synthetic Organic Chemistry
- Bioorganic Chemistry
- Medicinal Chemistry

SELECTED ARTICLES/ PUBLICATIONS

Hudson, R.H.E.; Dambenieks, A.K.; Viirre, R.D. 2005. A Direct Synthesis of Pyrrolocytosine from 5-Iodocytosine, Nucleosides, Nucleotides and Nucleic Acids, 24(5-7), 591-584.

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Viirre, R.D. and Hudson, R.H.E. 2001. Optimization of a Solid-Phase Synthesis of a PNA Monomer, Organic Letters, 3, 3931-3934.

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AREAS OF SPECIALIZATION

- Microbial ecology
- Biofilms
- Cellulolytic bacteria
- Biodegradation
- Environmental microbiology

SELECTED ARTICLES/ PUBLICATIONS

Johnson, S.A., S. Jackson, V.R. Abratt, G.M. Wolfaardt, R. Cordero-Otero and S.W. Nicolson. 2006. Xylose utilization and short-chain fatty acid production by selected components of the intestinal microflora of a rodent pollinator (Aethomys namaquensis). J. Comp. Physiol. B. 176: 631-641.

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Maré, L., G.M. Wolfaardt, and L.M.T. Dicks. 2006. Adhesion of Lactobacillus plantarum 423 and Lactobacillus salivarius 241 to the intestinal tract of piglets, as recorded with fluorescent in situ hybridization (FISH), and production of plantaricin 423 by cells colonized to the ileum. J. Appl. Microbiol. 100:838-845.

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AREAS OF SPECIALIZATION

- Inorganic chemistry
- Reaction thermodynamics
- Kinetics and mechanisms
- Supramolecular self-assembly

SELECTED ARTICLES/ PUBLICATIONS

E. Kurti, D.V. Heyd, and R. S. Wylie. 2005. Raman microscopy for the quantitation of propiconazole in white spruce. Wood Science Technol. 39:618-629.

R. S. Wylie, E. G. Levy and J. K. M. Sanders, 1997. Unexpectedly Selective Ligand Binding Within the Cavity of a Cyclic Metalloporphyrin Dimer. J. Chem Soc., Chem. Commun. 1997:1611-2.

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AREAS OF SPECIALIZATION

- Behaviour and design of concrete structures,
- Corrosion of reinforcing steel in concrete;
- Structural optimization and design for durability;
- Preservation and rehabilitation of concrete structures;
- Service life prediction and management of aging concrete bridge structures.

SELECTED ARTICLES / PUBLICATIONS

Amleh, L. and Ghosh, A. 2006. Modeling the Effect of Corrosion on Bond Strength at Steel- Concrete Interface Using Finite Element Analysis, Canadian Journal of Civil Engineering, Vol. 33, No. 6, June, pp. 673-682

Ghosh, A., and Amleh, L. 2005. Modeling the Effect of corrosion on Bond Strength at Steel-Concrete Interface using Finite-Element Analysis, Proceedings of the Annual Conference of the Canadian Society for Civil Engineering, Toronto, Ontario, Canada, June 2-5, pp. FR-165.

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AREAS OF SPECIALIZATION

- Geodesy
- Adjustment
- Robustness Analysis
- GPS
- Geodetic Measurement Techniques

SELECTED ARTICLES/ PUBLICATIONS

M. Berber, P. Dare, and P. Vanícek. 2006. Robustness Analysis of 2D networks, ASCE, Journal of Surveying Engineering, Vol. 132, Issue 4, pp. 168-175.

M. Berber, P. Dare and P. Vanícek. 2005. Remedial Strategy for Geodetic Networks Canadian Society for Civil Engineering, 33rd Annual Conference, June 2-4, 2005, Toronto, ON, Canada.

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S. Hekimoglu and M. Berber. 2003. Effectiveness of Robust Methods in Heterogeneous Linear Models, Journal of Geodesy 76 (2003) 11-12, 706-713.

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AREAS OF SPECIALIZATION

- Digital Stereo Image Processing
- Industrial Image Metrology
- Mobile Mapping Systems
- Deformation Measurements and Analysis
- Terrestrial and Airborne

SELECTED ARTICLES/ PUBLICATIONS

Li, J., Y. Li, and M. A. Chapman. 2005. Small-Format Digital Imaging for Informal Settlement Mapping, Photogrammetric Engineering & Remote Sensing, Vol. 71, No. 4, pp. 435-442.

Li, J., Y. Li, and M. A. Chapman. 2005. High-resolution Satellite Image Sources for Disaster Management in Urban Areas. In Oosterom, P., S. Zlatanova and E. M. Fendel (Eds.): Geo-information for Disaster Management, ISBN: 3-540-24988-5, Springer Verlag, New York, pp. 1055-1070.

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Commission V, Istanbul, Turkey, 12-23 July, CD.

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AREAS OF SPECIALIZATION

- Road Safety
- Highway geometric design
- Human factors in transportation
- Traffic operations and management

SELECTED ARTICLES/ PUBLICATIONS

Easa, S. and Halim, Amir. 2006. Radius requirements for trucks on three-dimensional reverse horizontal curves with intermediate tangents. Journal of Transportation Research Board, No. 1961, 2006, 83-93.

Easa, S. and Ali, Z. 2006. Three-dimensional stop-control intersection sight distance: General Model. Journal of Transportation Research Board, No. 1961, 2006, 94-103.

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Mehmood, A. and Easa, S. 2006. Optimizing geometric design of single-lane roundabouts: Multi-objective analysis. Canadian Journal for Civil Engineering, 2006, 33(1), 29-40.

Ease, S. and Kuwahara, M. (Guest Editors). 2006. Introduction. Special Issue on Computing and Information Technologies in Transportation Systems, International Journal of Computer-Aided Civil and Infrastructure Engineering, 21(5), 319-320.

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AREAS OF SPECIALIZATION

- Satellite Positioning and Navigation
- Integrated Navigation Systems
- Estimation and Data Series Analysis
- Hydrographic Surveying
- Geodesy

SELECTED ARTICLES/ PUBLICATIONS

El-Rabbany, A. 2006. Introduction to GPS: The Global Positioning System. 2nd revised edition. Artech House Publishers, Boston, USA. ISBN 1-59693-016-0. [received a 5-star rating on the Amazon website and is listed as a bestselling GPS book]

Abd El-Gelil, M. and A. El-Rabbany. 2005. A Hybrid Autonomous Positioning System for Public Transportation. Geomatica, Journal of the Canadian Institute of Geomatics. Vol. 59, No. 1, pp. 49-59.

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AREAS OF SPECIALIZATION

- Structural Engineering
- Earthquake Engineering
- Reinforced Concrete
- Liquid Containing Structures
- Analytical Modelling and Non-Linear Finite Element Analysis

SELECTED ARTICLES / PUBLICATIONS

Kianoush, M.R., Acarcan, M., and Dullerud, E. 2006. Temperature & shrinkage reinforcement in liquid containing structures, Concrete International, American Concrete Institute (ACI), Vol. 28, No.4, 62-66.

Kianoush, M.R., Mirzabozorg, H., and Ghaemian, M. 2006. Dynamic analysis of rectangular liquid containers in three-dimensional space, Canadian Journal of Civil Eng., 33:501-507.

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AREAS OF SPECIALIZATION

- Sustainable development in construction,
- High-performance concrete and self-consolidating concrete,
- Rehabilitation and repair of concrete infrastructures,
- Non-destructive testing,
- Computer simulation of structures, and
- Use of waste by-products in construction.

SELECTED ARTICLES/ PUBLICATIONS

Tumidajski, P.J., Fiore, L., Khodabocus, T., Lachemi, M., Pari, R. 2006. Comparison of Weibull and Normal Distributions for Concrete Compressive Strengths," Canadian Journal of Civil Engineering, 33(10): 1287-1292.

Shehata, M., Navarra, M., Klement, T., Lachemi, M., Schell, H. 2006. Use of Wet Cellulose to Cure Shotcrete Repairs on Bridge Soffits, Part I: Field Trial and Observations, Canadian Journal of Civil Engineering, 33(7), 807-814.]

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Hossain, K.M.A., Lachemi, M. 2006. Development of Volcanic Ash Concrete: Strength, Durability and Micro-Structural Investigations, ACI Materials Journal, 103(1), 11-17.

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AREAS OF SPECIALIZATION

- Water resources engineering,
- Water pollution control and water quality modelling;
- Eco-hydraulics;
- Industrial pollution control;
- Environmental green technology.

SELECTED ARTICLES / PUBLICATIONS

Des Lauriers, A., Li, J., Sze, K., Baker, S., Gris, G., and Chan, J. 2006. A Field Study of the Use of Methoprene for West Nile Virus Mosquito Control. Journal of Environmental Engineering and Science, 5:517-527.

Pyatt, L. and Li, J. 2006. Monitoring the Performance of a Construction Sediment Pond. Proc. Of the Stormwater and Urban Water Systems Modeling Conference, Toronto, Ontario, Feb. 24-25, 2005. 14:423-440.

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AREAS OF SPECIALIZATION

- Geomatics engineering;
- Geographical information systems;
- 3D modeling and geographic visualization;
- Collaborative geospatial data handling and services;
- Web/wireless GIS and LBS;

SELECTED ARTICLES / PUBLICATIONS

Li, S. 2006. Web-based Collaborative Spatial Decision Support Systems: A Technological Perspective, In Collaborative Geographic Information System, S. Dragicevic and S. Balram, eds., pp. 285-315, Idea Group, Inc. (ISBN: 1-5914-0846-6).

Li, S. & X. Ma. 2006. An Open Source GIS Solution for Supporting Public Participation in Municipal Planning, the International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol. XXXVI, Part 4, Commission IV, pp. 1056-1060 (ISSN 1682–1750).

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AREAS OF SPECIALIZATION

- Water quality: drinking water quality assessment, chemical treatment of phosphates and nitrates.
- Wastewater treatment: combined coagulation and chemical reduction of TOC, nutrients, BOD/COD and particulate pollutants.
- Magnetically induced coagulation for the pre-

treatment of oil and COD from industrial waste.
- Engineering infrastructures and facilities, such as greenroofs, dual-purpose stormwater detention ponds and fibre-reinforced watermain linings.
- Bioaccumulation mathematical modeling of pollution on aquatic species at the upper trophic levels, for PCBs and methyl mercury in Lake Ontario fish species.

SELECTED ARTICLES/ PUBLICATIONS

Luk, G. K. and W.C. Au-Yeung 2006. Modeling Human Exposure of Methyl Mercury from Fish Consumption, Water Quality Research Journal of Canada, Vol. 41, No. 1, 2006.

M. Mohammad, S. Persaud, G. Luk, J. Daviau, M. Stirrup, S. Jacob. 2006. Physical Modelling of a Self-Scouring Outfall on Lake Ontario, 41st Annual Central Canadian Symposium on Water Quality Research, 13–14 February 2006, Burlington, Ontario, Canada.

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Luk, G. K., S. Itoh, and Y. Miyagawa. 2006. Effect of pH and Bromide Presence on the Genotoxicity of Disinfection By-Products, International J. of Environmental Health Research.

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AREAS OF SPECIALIZATION

- Structural/Concrete engineering.
- Offshore structural design.
- High-Strength concrete structures.
- Building rehabilitation.
- Crack and Creep analysis.

SELECTED ARTICLES/ PUBLICATIONS

Hossin, M. and Marzouk, H. 2006. Offshore Concrete Crack Analysis, 1st International Structural Specialty Conference, 34nd Annual Conference for the Canadian Society for Civil Engineering, Calgary, May.

Sabrah, T., Marzouk, H. and A. Hussein. 2006. Analysis of GFRP-Reinforced Concrete Panels for Direct Biaxial Tension, 1st International Structural Speciality Conference, 34nd Annual Conference for the Canadian Society for Civil Engineering, Calgary, May.

Sabrah, T., Marzouk, H. and A. Hussein. 2006. Utilization of GFRP-Reinforced Concrete panels for box Girders, 7th International Conference on Short & Medium Span Bridges, Montreal, August.

Ebead, U. and Marzouk, H. 2005. A Tension-Stiffening Model for FRP-Strengthened Concrete Two-Way slabs, Materials and Structures, RILEM Publications, Vol. 38, No. 276, March, pp. 193-200.

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AREAS OF SPECIALIZATION

- Road Safety
- Geometric Design
- Traffic Engineering
- Traffic Operations and Management
- Statistical Analysis

SELECTED ARTICLES/ PUBLICATIONS

Jagannathan R., Gimbel M., Bared J., Hughes W., Persaud B. and C. Lyon. 2006. Safety Comparison of New Jersey Jughandle Intersections and Conventional Intersections. Transportation Research Record, Journal of Transportation Research Board 1953, pp. 187-200.

Hadeyeghi A., Shalaby A., Persaud B. and C. Cheung. 2006. Temporal transferability and updating of zonal level accident prediction models. Accident Analysis and Prevention, Vol. 38, Issue 3, May, pp. 579-589.

Parajuli B., Persaud B., Lyon C. and Munro J. 2006. Safety Performance Assessment of Freeway Interchanges, Ramps, and Ramp Terminals. Transportation Association of Canada Annual Conference, Prince Edward Island, September.

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AREAS OF SPECIALIZATION

- Structural engineering,
- Bridge infrastructure design, evaluation, retrofit and rehabilitation;
- Experimental and analytical modelling of Composite concrete-steel material behaviour; vehicle crash-worthiness of roadside objects;
- Application of fibre reinforced polymers (FRP) in structures and bridges.

SELECTED ARTICLES/ PUBLICATIONS

Shah, K. Sennah, R. Kianoush, Siyin Tu and Clifford Lam. 2006. Experimental Study on Prefabricated Concrete Bridge Girder-to-Girder Connection Systems: Moment-Transferring Connections, Journal of Prestressed Concrete Institute, PCI, Vol. 51, No. 6, 86-107.

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AREAS OF SPECIALIZATION

- Durability and deterioration of concrete structures;
- Alkali aggregate reaction: mechanisms, test methods and preventive measures;
- Use of construction/industrial wastes and co-generated products in concrete, asphalt and low-strength materials
- Durability of concrete: sulphate attack, mass transport, freezing and thawing and salt scaling
- Performance and evaluation of pavement materials.

SELECTED ARTICLES / PUBLICATIONS

Shehata, M., Navarra, M. , Klement, T., Lachemi, M. and Schell, H. 2006. Use of Wet Cellulose to Cure Shotcrete Repairs on Bridge Soffits, Part 1: Field Trial and Observations. Canadian Journal of Civil Engineering, Vol. 33:7, pp. 807-814.

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Shehata, M. and Thomas M, 2006. Alkali Release Characteristics of Blended Cement. Cement and Concrete Research, Vol. 36, pp. 1166-1175

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AREAS OF SPECIALIZATION

- Bioreactor Landfill Design and Operation
- Solid Waste Management and Treatment
- Leachate Treatment
- Landfill Gas Management and Utilization
- Control of Greenhouse Gas Emission to the Environment

SELECTED ARTICLES / PUBLICATIONS

Daiz, R. and Warith M.A. 2006. Life Cycle Assessment of Municipal Solid Waste: Development of WASTED Model. Waste Management Journal, Vol. 26 (8): pp. 886-901.

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Warith, M. A. and Rao, S.M. 2005. Predicting the Compressibility Behaviour of Tire Shreds for Landfill Applications. Waste Management Journal, Vol. 26 (3): pp. 268-276.

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AREAS OF SPECIALIZATION

- Internet/Web Performance Evaluation
- Web Caching
- Multimedia Retrieval
- Computer Networks and Distributed Systems
- Database Systems

SELECTED ARTICLES/ PUBLICATIONS

A. Abhari, S. P. Dandamudi and S. Majumdar, 2006. Web object-based storage management in

proxy caches. Future Generation Computer Systems Journal, Vol. 22, Issues 1-2, pp. 16-33. N. A. Lewycky, B. M. Benhan, A. Abhari, 2006. Improving the performance of the squid proxy cache. Proceedings of 9th Communications and Networking Simulation Symposium (CNS06), Huntsville, AL., USA.

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A. Abhari, S. P. Dandamudi and S. Majumdar, 2002. Exploiting Web document structure to improve storage management in proxy caches. Proceedings of IEEE International Conference on High Performance Computing, Bangalore, India.

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AREAS OF SPECIALIZATION

- Information Retrieval
- Web Site Search
- Active Web Intermediary
- Content Delivery Network
- Service Oriented Computing

SELECTED ARTICLES/ PUBLICATIONS:

Jin Zhou, Chen Ding, and Dimitrios Androutsos, 2006. Improving Web site search using Web server logs. Proceedings of the 16th IBM Center for Advanced Studies Annual International Conference on Computer Science and Software Engineering (CASCON), pp. 290-302.

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AREAS OF SPECIALIZATION

- Mobile Robotics,
- Tele-presence,
- Autonomous Agents,
- Urban Search and Rescue Robotics
- Canine Augmentation

SELECTED ARTICLES/ PUBLICATIONS

J.E. Coleshill, A. Ferworn, D. Stacey, 2006. Feature extraction through time. Proceedings of the 57th International Astronautical Congress, IAC-06-B4.4.03, Valencia Spain, Oct 2-6, 2006.

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AREAS OF SPECIALIZATION

- Distance education
- Computer Science education
- Computer uses in education
- Internet radio broadcasting.

SELECTED ARTICLES/ PUBLICATIONS

Hamelin, D. 2004. Searching the Web to develop inquiry and collaborative skills, ACM SIGCSE Inroads, 36(4).

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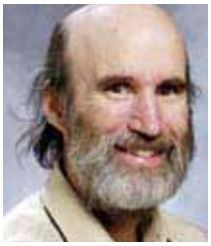

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AREAS OF SPECIALIZATION

- Bioinformatics
- Graph Algorithms

SELECTED ARTICLES/ PUBLICATIONS

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AREAS OF SPECIALIZATION

- Medical Image Analysis
- 3D Volume rendering
- Computer-Assisted Diagnosis
- Image Processing
- Computer Vision

SELECTED ARTICLES/ PUBLICATIONS

Y Jia, Y Jiang, 2006. Active contour model with shape constraints for bone fracture detection. Proceedings of the Third International Conference on Computer Graphics, Imaging and Visualization (CGIV06), 26-28 July 2006, Sydney, Australia.

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AREAS OF SPECIALIZATION

- Programming languages
- Compilers
- Software analysis
- Software reliability
- Probabilistic program execution

SELECTED ARTICLES/ PUBLICATIONS

Hamlet, D., Mason, D., Woit, D., 2003. Properties of Software Systems Synthesized from Components, Component-based Software Development, K-K Lau (Ed), World Scientific, ISBN 981-238-828-1.

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AREAS OF SPECIALIZATION

- Interactive Visual Analysis of 3D Data
- Medical Image Visualization and Analysis
- Surgical Planning and Simulation
- 3D Human Computer Interaction
- Information Visualization

SELECTED ARTICLES/ PUBLICATIONS

G. Hamarneh, R. Abu-Gharbieh, T. McInerney, 2004. Medial Profiles for Modeling Deformation and Statistical Analysis of Shape and Their Use in Medical Image Segmentation", International Journal of Shape Modeling, 10(2), pp. 187-209.

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AREAS OF SPECIALIZATION

- Object-Oriented Analysis, Design, Programming
- Teaching of Scientific/ Engineering Programming Languages
- Data Structures
- IBM Mainframe Architecture and Programming (under development)

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AREAS OF SPECIALIZATION

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- Usability Engineering
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AREAS OF SPECIALIZATION

- Computational intelligence
- Neural networks
- Knowledge-based systems
- Computer security
- Nonlinear modelling

SELECTED ARTICLES/ PUBLICATIONS

M. Arvandi, S. Wu, A. Sadeghian, W. Melek, and I. Woungang. 2006. Symmetric cipher design using recurrent neural networks. Proceedings of the International Joint Conference on Neural Networks, pp. 2039-2046.

Z. Ye, A. Sadeghian, and B. Wu. 2006. Mechanical fault diagnosis for induction motor with variable speed drives using adaptive neuro-fuzzy inference system. Electric Power Systems Research, Vol. 76, No. 9, pp. 742-752.

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AREAS OF SPECIALIZATION

- Logic-based knowledge representation and reasoning
- Logic programming technologies
- Reasoning about actions and change
- Programming Languages

SELECTED ARTICLES/ PUBLICATIONS

Marcus V. dos Santos. 2006. Executable denotations for concurrent languages using Concurrent Transaction Logic. Proceedings of the 20th Workshop on Logic Programming (WLP-06), Vienna, Austria.

Marcus V. dos Santos. 2005. Denotational semantics using horn concurrent transaction logic. Proceedings of the International Conference on Logic Programming (ICLP-05), Sitges, Spain.

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Marcus V. dos Santos, Paulo E. Santos. 2003. Sensor data assimilation as database transactions. Proceedings of the AAAI Spring Symposium on Logical Formalization of Commonsense Reasoning, Stanford University, California, USA, March 24-26.

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AREAS OF SPECIALIZATION

- CSCW/CSCL
- Software Engineering
- Virtual Teams
- e-Commerce
- Database Systems

SELECTED ARTICLES/ PUBLICATIONS

A N Shaikh, 2004. New Skills in New Digital World, Ryerson Faculty Conference; May 18-19, Ryerson, Toronto, Canada.

A N Shaikh, 2003. Integrating Groupware Technology into the Learning Environment, Ph.D. Thesis, Department of Computation, UMIST, Manchester, United Kingdom,.

A N Shaikh and Linda Macaulay, 2001. Integrating Groupware Technology into the Learning Environment, ALT (Association for Learning Technology) —Journal, Vol. 9.2, June.

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AREAS OF SPECIALIZATION

- Knowledge representation and reasoning
- Planning under uncertainty
- Logical formalization of commonsense reasoning
- Cognitive Robotics

SELECTED ARTICLES/ PUBLICATIONS

Y. Gu and M. Soutchanski, 2006. A logic for decidable reasoning about services. Proceedings of the 4th International Workshop on AI for Service Composition, pp. 1-8, held in conjunction with the Seventeenth European Conference on Artificial Intelligence (ECAI 2006), Riva del Garda, Italy, August 27, 2006; and also in the Proceedings of the Workshop AI-Driven Technologies for Services-Oriented Computing, held in conjunction with the Twenty First National Conference on Artificial Intelligence (AAAI-06), Boston, Massachusetts, USA, July 16 2006.

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AREAS OF SPECIALIZATION

- Software Testing
- Software Reliability
- Agile Software Engineering
- Software Verification and Validation
- Computer Science Education

SELECTED ARTICLES/ PUBLICATIONS

D. Hamlet, D. Mason, D. Woit. 2001. Theory of Software Component Reliability, Proceedings of the IEEE/ACM 23rd International Conference on Software Engineering (ICSE'2001), May.

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D. Woit, 1994. A Framework for Reliability Estimation, Proceedings of the 5th IEEE International Symposium on Software Reliability Engineering (ISSRE'94), November 6-9,. pp. 18-24.

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AREAS OF SPECIALIZATION:

- Telecommunications network design
- Network security
- Categories theory and its Applications
- Error-correcting codes.

SELECTED ARTICLES/ PUBLICATIONS

Isaac Woungang, Alireza Sadeghian, Shuwei Wu, S. Misra, Maryam Arvandi, 2006. Wireless Web security using a neural network-based cipher. Chapter 2 in the book "Web Services Security and E-Business", G. Radhammani , G. S.V. Radha Krishna Rao (Eds.), Idea Group Publishing Inc., USA, ISBN: 1-59904-168-5.

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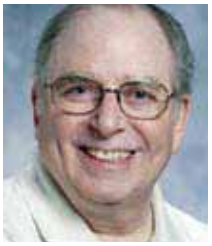

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AREAS OF SPECIALIZATION

- Wireless Data Communications
- Parallel Signal Transmission,
- Cluster Computers
- Optimization and Control Systems
- Process Dynamics and Control

SELECTED ARTICLES/ PUBLICATIONS

G.D. Zarnett, 1983. Safeguards for Heavy Water Plants, Study 11, "Sampling System", Intl. Atomic Energy Agency, Lummus Canada Inc. (LCI).

G.D. Zarnett, 1976. Sorption Capabilities of Soil for Phosphate Removal, M.O.E., Pollution Control Branch, Publication No. S58, January.

F.Besik, V. Pancuska, G.D. Zarnett, A. Mlynarczyk, 1971. Reverse Osmosis—Engineering Considerations, Food Engineering, Vol. 43, pp. 72-75.

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G.D. Zarnett, M.E. Charles, 1969. Concurrent Gas-Liquid Flow in a Horizontal Tube with Internal Spiral Ribs, Canadian Journal of Chemical Engineering, Vol. 47, pp. 238-241.

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AREAS OF SPECIALIZATION

- Biomedical Signal Analysis
- Medical Image Processing
- Pattern Recognition and Classification
- Computer Vision and Artificial Neural Networks

SELECTED ARTICLES/ PUBLICATIONS

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AREAS OF SPECIALIZATION

- Image, video and multimedia processing
- Digital cinema
- Multimedia retrieval
- Object identification and tracking
- Image and video compression

SELECTED ARTICLES/ PUBLICATIONS

P. Androutsos, D. Androutsos, A.N. Venetsanopoulos. 2006. A Distributed Fault-Tolerant MPEG-7 Retrieval Scheme based on Small World Theory, IEEE Transactions on Multimedia, Vol. 8, No. 2, April.

P. Androutsos, D. Androutsos, A.N. Venetsanopoulos. 2006. Small World Distributed Access to Multimedia Data,' IEEE Signal Processing Magazine, 23(2), pp. 142-153, March.

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AREAS OF SPECIALIZATION

- multicarrier spread spectrum systems
- wireless cross layer optimization
- hybrid multiple access technologies
- radio resource management
- QoS-aware packet scheduling

SELECTED ARTICLES/ PUBLICATIONS

Y. Sun, L. Zhao and A. Anpalagan. 2006. Cross layer design and analysis of downlink communication in cellular CDMA systems, In EURASIP Journal on Wireless Communications and Networking: Special Issue on Radio Resource Management in3G+ Systems, Article ID 21297, 23 pages.

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AREAS OF SPECIALIZATION

- System dynamics, Modelling and Control
- Statistical Signal Processing and Data Denoising
- Statistical Learning Theory and Generalization

SELECTED ARTICLES/ PUBLICATIONS

Beheshti S. 2006. A new approach to order selection and parametric spectrum estimation, Proceedings of the IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP).

S. Beheshti and M.A. Dahleh. 2005. A new information theoretic approach to signal denoising and best basis selection, IEEE Transactions on Signal Processing Vol. 53, No. 10, Oct.

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AREAS OF SPECIALIZATION

- Real-Time control systems
- Control of robotic manipulators
- Numerical Optimization

SELECTED ARTICLES/ PUBLICATIONS:

Y.C. Chen and J.M. Naughton. 2000 . An Undergraduate Laboratory Platform for Control System Design, Simulation, and Implementation, IEEE Control Systems Magazine, June, pp. 12-20.

Y.C. Chen. 1991. Solving Robot Trajectory Planning Problems with Uniform Cubic B-Splines, Control Applications & Methods, Vol. 12(4), pp. 247-262.

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Y.C. Chen, 1989. On the Structure of the Time-Optimal Controls of Robotic Manipulators, IEEE Transactions on Automatic Control, Vol. AC-34, No. 1, pp. 115-116, Jan.

Y.C. Chen, 1987. Comments on Selection of Near-Minimum-Time Geometric Paths for Robotic Manipulators, IEEE Transactions on Automatic Control, Vol. AC-32, No. 11, pp. 1027-1028, Nov.

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AREAS OF SPECIALIZATION

- Power Electronics
- Power Systems
- Alternative Energy
- Power Quality
- Controls

SELECTED ARTICLES/ PUBLICATIONS

T. Mander, R. Cheung, F. Nabhani. 2006. Power System Peer-to-Peer Networking Data Object Based Security," IEEE 1-4244-0557-2, LES Conf. on Power Eng., Halifax, FA-Distribution System Studies II, pp. 90-94, July.

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AREAS OF SPECIALIZATION

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AREAS OF SPECIALIZATION

- Dependability Modelling of Distributed Systems
- Fault-tolerant Computing

SELECTED ARTICLES/ PUBLICATIONS

Olivia Das. 2005. Dependability Modeling of Clustered J2EE Applications, Fast Abstract, 16th IEEE International Symposium on Software Reliability Engineering (ISSRE'05), pp. 4.10-4.11.

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AREAS OF SPECIALIZATION:

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- Wireless Communications
- Signal Processing
- Radio over Fibre
- Nonlinear systems

SELECTED ARTICLES/ PUBLICATIONS

Xavier Fernando and Balendran Balakanthan. 2005. Adaptive Equalization and Denoising of an Infrared Wireless CDMA System Eurasip Journal on Wireless Communications, special issue on Optical Wireless Communications, Vol. 2005:1, pp. 20-29.

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AREAS OF SPECIALIZATION

- Built-in self-test and self-repair in reconfigurable computing systems
- Digital and mixed-signal systems testing and testable design
- Self-diagnosis in microprocessor-based measurement instruments
- Error-Control Codes

SELECTED ARTICLES/ PUBLICATIONS

V. Geurkov. 2002. On-line self-checking for a phase-sensitive analog-to-digital converter. Proc. Int. Conf. VLSI, USA:147-150.

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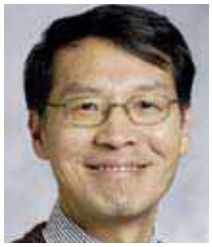

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AREAS OF SPECIALIZATION:

- Fibre optic devices and modules
- Fibre optic sensing
- Laser and laser applications

SELECTED ARTICLES/ PUBLICATIONS

Waleed Mohammed, P. W. E. Smith and Xijia Gu. 2006. All-fiber Multimode Interference Bandpass Filter", Optics Letters, Vol. 31, No. 17, pp. 2547-2549, September.

Wen. Zu and Xijia Gu. 2006. Fast Fiber Optic Tunable Filter Based on Axial Compression of a Fiber Bragg Grating, Applied Optics, Vol. 45, No. 25, pp. 6457-6462, September.

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AREAS OF SPECIALIZATION:

- Multimedia processing and communications
- Human centered computing
- Image and video processing
- Biometrics and biomedical engineering
- Bioinformatics

SELECTED ARTICLES/ PUBLICATIONS

P. Muneesawang and L. Guan. 2005. Video retrieval using adaptive video indexing and automatic relevance feedback, IEEE Trans. on Circuits and Systems for Video Technology, 15(8):1032-1046, August.

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AREAS OF SPECIALIZATION

- Modelling of lightning return-stroke current at tall structures
- Evaluation of lightning detection networks
- Measurement of CN Tower lightning parameters
- Signal processing (de-noising the lightning current derivative signals using Fourier and Wavelets Transforms)

SELECTED ARTICLES/ PUBLICATIONS

A.M. Hussein and M. Milewski. 2006. CN Tower Lightning Snowstorm Characteristics, Proceedings of the 28th International Conference on Lightning Protection (ICLP), pp. 95-99, Kanazawa, Japan, September 18-22.

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AREAS OF SPECIALIZATION

- Computer Networks
- Wireless Networks
- Network Protocols
- Distributed Systems
- Optimization Algorithms

SELECTED ARTICLES/ PUBLICATIONS

M. Jaseemuddin, A. Nanthakumaran, and A. Leon-Garcia. 2006. TE-Friendly Content Delivery Request Routing in a CDN, Proceedings of IEEE International Conference on Communications (ICC), Istanbul, Turkey, 11-15 June.

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M. Jaseemuddin. 2003. An Architecture for Integrating UMTS and 802.11 WLAN Networks, Proceedings of The 8th IEEE International Symposium on Computers and Communications (ISCC), Turkey, pp. 716 – 723, July.

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AREAS OF SPECIALIZATION

- Digital CMOS design
- Noise modeling in deep-submicron (DSM) CMOS Systems
- Virtual library generation and performance driven transistor sizing
- Design for re-suability
- Timing and power consumption modeling in digital DSM CMOS circuits

SELECTED ARTICLES/ PUBLICATIONS

A. Kabbani, D. Al-Khalili, and A. J. Al-Khalili. 2005. Technology-portable analytical model for DSM CMOS inverter delay estimation, IEE proceedings on Circuits, Devices and Systems, Vol. 152, No. 5, pp. 433-440, October.

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A. Kabbani and A. J. Al-Khalili. 1999. Estimation of ground bounce effects on CMOS circuits, IEEE transactions on Component and Packaging Technology, Part 1, Vol. 22, No. 2, pp. 316-325, June.

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AREAS OF SPECIALIZATION:

- Photonics
- Electromagnetics
- Field theory
- General relativity

SELECTED ARTICLES/ PUBLICATIONS

P. Kantorek. 2002. Interpretation of the Concept of Time, Presented at the Centre for Theoretical Study, Czech Academy of Sciences and Charles University, Prague, November.

P. Kantorek. 2002-05. .Gravitational Puzzle, sci. physics.research.

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P. Kantorek. 1967. The Theory of Microwave Detection by a Discharge, Czech Journal of Physics, Vol. B17, pp. 1021-1037.

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AREAS OF SPECIALIZATION:

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- Power electronics

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AREAS OF SPECIALIZATION:

- Biomedical Instrumentation
- Real-time Digital Signal Processing & Embedded Systems
- Advanced analog/digital circuit designs

SELECTED ARTICLES/ PUBLICATIONS:

Blaber A. P., Bondar R. L., and Kassam M. S. 2004. Heart rate variability and short duration spaceflight: relationship to post-flight orthostatic tolerance, BMC Physiology. 4(1): 6.

Blaber, A. P., Bondar, R. L., Kassam, M. S. 2003. Autonomic Control of Heart Rate Pre- and Post- Spaceflight as assessed by Heart Rate Variability Analysis: Relationship to Post Flight Orthostatic Intolerance, 14th IAA Humans in Space Symposium, Banff, Alberta. May 18-22.

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Serrador, J.M., Shoemaker, J.K., Brown, T.E., Kassam, M.S., Bondar, R.L. and Schlegel, T.T. 2000. Cerebral Vasoconstriction Precedes Presyncope Post Parabolic Flight, Brain Research Bulletin, UK.; Sept 1; 53(1):113-20.

US Patent #5629498: "Intraoperative Tracking Devices and Processes", Pollock R.A. and Kassam M. S., May 1997.

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AREAS OF SPECIALIZATION

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- Hardware Software Codesign
- System Partitioning and Co-synthesis
- Fault-tolerant and Intelligent Systems
- Computer Vision and Image Analysis

SELECTED ARTICLES/ PUBLICATIONS

Y. Yang, A. Guergachi and G. Khan, 2006. Support Vector Machines for Environmental Informatics: Application to Modeling the Nitrogen Removal Processes in Wastewater Treatment Systems, Journal of Environmental Informatics, Vol. 7 No. 1. pp. 14-25 March 2006.

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Gul N. Khan and Duncan F. Gillies, 1996. A Vision based Navigation System for an Endoscope, Image and Vision Computing, Vol. 14, No. 10, pp. 763-772, December 1996.

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AREAS OF SPECIALIZATION

- Parallel computing architectures
- Automated architectural synthesis
- Re-configurable computing systems
- Self-assembled and self-restorable computing micro-architectures

SELECTED ARTICLES/ PUBLICATIONS

Lev Kirischian, Irina Terterian, Pil Woo Chun, and Vadim Geurkov, 2004. Re-Configurable Parallel Stream Processor with

Self-Assembling and Self-Restorable Micro-architecture, in Proceedings of International Conference PARELEC-2004, pp. 165-170, Dresden, Germany, September 7-10.

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L. Kirischian, 2000. Optimization of Parallel Task Execution on the Adaptive Reconfigurable Group Organized Computing System, in Proc. International Conference PARELEC-2000, pp. 100-105, Trois-Rivers, Quebec, August.

L. Kirischian, L. Szajec and K. Safaryan, 2000. Implementation of the Method of Architecture Selection for Data-Flow Tasks on Adaptive Reconfigurable Platform, in Proc. International workshop on Reconfigurable Computers—CORE-2000, pp. 78-89, Marilia, Brazil, August.

L. Kirischian, 1998. The method of selection of architecture configuration for executable tasks, in Proc. PACT'98 International Conf. on Parallel Architectures and Compilation Techniques, Workshop on Reconfigurable Computing, pp. 125-129, Paris, France, October.

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AREAS OF SPECIALIZATION:

- Biomedical signal and image analysis
- Signal processing and pattern recognition
- Multimedia information forensics
- Biometrics and bioinformatics

SELECTED ARTICLES/ PUBLICATIONS

A. Ramalingam and S. Krishnan, 2006. Gaussian Mixture Modeling of Short Time Fourier Transform Features for Audio Fingerprinting, IEEE Trans. Information Forensics and Security, Vol. 1, Issue 3, pp. 457-463, Dec.

S. Erkucuk, S. Krishnan, and M. Zeytinoglu, 2006. A Robust Audio Watermark Representation using Linear Chirps, IEEE Trans. Multimedia, Vol. 8, Issue 5, pp. 925-936, Oct.

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X. Li, S. Krishnan and N.-W. Ma, Application of Grammar-based Codes for Lossless Compression of Digital Mammograms, Journal of Electronic Imaging, Vol. 15, No. 1, CID: 013021, 11

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AREAS OF SPECIALIZATION:

- Ubiquitous computing, Grid computing, and network game computing
- Designs and analysis of wired and wireless network architectures and protocols
- 3D game designs and multimedia semantics
- RFID system, circuit, and protocol designs
- MEMS designs and implementations

SELECTED ARTICLES/ PUBLICATIONS

A. Tang, F. Yuan, K.L.E. Law, 2006. A New 2.4GHz CMOS Low-Noise Amplifier with Automatic Gain Control, IEEE 49th Midwest Symposium on Circuits and Systems (MWSCAS), San Juan, Puerto Rico, Aug. 6-9.

K.L. Eddie Law, Sunny So, 2005. Real-time perceptual QoS satisfactions of multimedia information, 2nd ACM Inter. Workshop Performance Evaluation of Wireless Ad Hoc, Sensor, and Ubiquitous Networks (PE-WASUN 2005), Montreal, Canada, Oct 13-16.

K.L. Eddie Law, Sunny So, 2004. Pervasive Computing on Active Networks, (invited paper) The Computer Journal, Vol.47, Issue 4, pp.418-431, July, The British Computer Society, Oxford Press.

K.L. Eddie Law, Kason Wong, 2004. Design and Performance Evaluation of Active Bandwidth Brokers, Annals of Telecommunications Journal, Special Issue: Policy-based network management, Vol. 59, No. 1-2, pp. 88-107, Jan.-Feb.

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AREAS OF SPECIALIZATION
- Multimedia Communication
- Multimedia Signal Processing
- Multimedia Sensor Networks
- Peer-to-Peer Networks
- 3D and Multi-view applications

SELECTED ARTICLES/ PUBLICATIONS

L. Guan, P.Muneesawang, J. Lay, T. Amin, and I. Lee, 2005. Human-Centered Computing for Image and Video Retrieval, Chapter 1, Intelligent Multimedia Processing with Soft Computing, pp. 1-31, Springer-Verlag Berlin Heidelberg. ISBN 3-540-23053-X.

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I. Lee, and L. Guan, 2005. Reliable Video Communication with Multi-Path Streaming, Proc. of IEEE International Conference on Multimedia and Expo, Amsterdam, Netherlands, pp. 711-714, Jul.

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AREAS OF SPECIALIZATION
- Internet Protocols
- Quality of Services in Multimedia Networks
- Network Security

SELECTED ARTICLES/ PUBLICATIONS

X. Li, S. Krishnan and N.W. Ma, 2006. Application of Grammer-Based Code for Lossless Compression of Digital Mammograms, Journal of Electronic Imaging (SPIE), Vol. 15, No. 1, CID: 013021, January.

Y. Jia, L. Zhao, and N.W. Ma, 2006. Clustering-Based Expanding-Ring Routing protocol Applied in Wireless Sensor Networks, the 6th Internation Conference on ITS Telecommunication.

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X. Zhang, H. Ghandehari, K.W. Yip, N.W. Ma, K. Raahemifar, 2004. Fuzzy Logic Control in RPR Networks, Proc. IEEE Canadian Conference on Electrical and Comptuer Engineering, May, Niagara Falls, Canada.
K.W. Yip, N.W. Ma, X. Zhang, H. Ghandehari, K. Raahemifar, 2003. Design and Performance Analysis of RPR with Dual Stage Queues, Proc. The 7th World Multiconference on Systemics, Cybernetics and Informatics, July, Orlando, Florida, USA.

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AREAS OF SPECIALIZATION
- Biomedical engineering
- Human-computer interaction
- Human adaptation mechanisms and learning
- Sensation of self motion in multimedia displays
- Sensory integration
- Multimedia information processing

SELECTED ARTICLES/ PUBLICATIONS

Virk, Sumandeep and Valter McConville, Kristiina M. 2006. Virtual Reality: Applications in Minimizing Occupational Falls, Association for Canadian Ergonomists 37th Annual Conference, Banff, October 22-25.

Virk, Sumandeep and Valter McConville, Kristiina M. 2006. Virtual Reality Applications in Improving Postural Control and Minimizing Falls, IEEE Engineering in Medicine and Biology Conference, New York, NY, Aug. 29–Sept. 3.

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Milosevic, M. and McConville, K. 2006. A Wireless Vibration Detector (WVD) in Prevention and Management of the Risks Associated with Exposure to Workplace Vibrations, Industrial Accident Prevention Association IAPA, May 1-3.

Valter McConville, K.M. and Virk, S. 2006. Why looking at Earth may reduce Space Sickness, Astro 2006, Canadian Aeronautics and Space Institute and the Canadian Space Agency, April 25-27.

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AREAS OF SPECIALIZATION
- Computer Architecture
- Parallel Processing
- High-performance

memory systems
- Advanced processors
- Performance evaluation and modelling

SELECTED ARTICLES/ PUBLICATIONS

N. Mekhiel, 2006. Understanding The Behavior of Simultaneous Multithreaded and Multiprocessor Architectures, ISCA 21st International Conference on Computers and Their Applications (CATA-2006) to be held March 23-25, Seattle, Washington, USA

Nagi Nassief Mekhiel, 2005. 'Methods And Apparatus For Accelerating Retrieval Of Data From A Memory System With Cache By Reducing Latency, Patent No: US 6,892,279 B2 May 10.

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Nagi Mekhiel, 1995. Multi-Level Cache with Most Frequently Used Policy: A New Concept in Cache Design, ISCA International Conference on Computer Applications in Industry and Engineering, November 29 – December 1, Honolulu, Hawaii.

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AREAS OF SPECIALIZATION

- Electro-thermal analysis
- Semiconductor devices modeling
- Microelectronics
- IC thermal simulation

SELECTED ARTICLES/ PUBLICATIONS

F.A. Mohammadi, K. Meres and M.C.E. Yagoub, 2005. Thermal Analysis of the Interconnect Metals in Integrated Circuits, WSEAS Transactions on Circuits and Systems, Vol. 4, No. 2, pp. 155-160, Feb.

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AREAS OF SPECIALIZATION

- Simulation
- Design
- Testing of VLSI circuits

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AREAS OF SPECIALIZATION

- VLSI design Test
- Combinatorial Optimization Problems
- Layout synthesis
- Real time fault injection
- Fault modelling

SELECTED ARTICLES/ PUBLICATIONS

R. Sedaghat, M. Kunchwar, R. Abedi, R. Javaheri, 2006. Transistor-level to Gate-level Comprehensive Fault Synthesis for n Input Primitive Gates, International Journal of Microelectronics Reliability, Science Direct, Elsevier, Vol. 46, Issue 12, December, pp. 2149-2158.

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J. Zalev, R. Sedaghat, 2006. Complex Energy Signal Model for Digital Human Fingerprint Matching, Transactions on Engineering, Computing and Technology, Enformatika Vol. 13, ISSN 1305-5313, May, pp. 136-140.

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AREAS OF SPECIALIZATION

- Power electronics
- High-power converters
- Electric drives
- Flexible ac transmission systems
- Advanced controls

SELECTED ARTICLES/ PUBLICATIONS

J.Wiseman, and B.Wu, 2005. Active Damping Control of a High-Power PWM Current Source Rectifier for Line Current THD Reduction, IEEE Trans. on Industrial Electronics, Vol. 52, No. 3, pp. 758-764.

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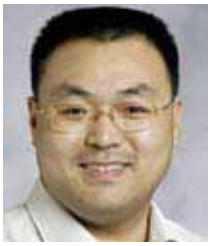
W.Zhang, G.Feng, Y.F. Liu and B.Wu, 2005. A New Duty Cycle Parallel Control Method and FPGA Implementation for AC-DC Converters with Power Factor Correction (FPC), IEEE Applied Power Electronics Conference, Austin, March 6-10, pp. 805 – 811.



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AREAS OF SPECIALIZATION

- Power electronics
- Electric drives
- Energy Conversion

SELECTED ARTICLES/ PUBLICATIONS

Yidan Li, Dewei Xu and Bin Wu, 2004. Real-Time Simulator for Medium Voltage Drives Fed by Current Source Inverter, 35th IEEE Annual Power Electronics Specialists Conference, pp. 3547-3552.

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AREAS OF SPECIALIZATION

- Data security
- Role-based access control modeling
- Information flow analysis
- Security of wireless sensor networks
- Web security

SELECTED ARTICLES/ PUBLICATIONS

Cungang Yang and C. N. Zhang, 2005. A Privacy Enhanced Role-based Access Control Model for Enterprises, ICCNMC 2005, Lecture Notes in Computer Science (LNCS3619), August 2-4, Zhangjiajie, Hunan, China, pp. 1012-1021.

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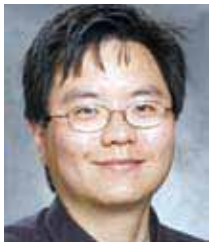

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AREAS OF SPECIALIZATION:

- Field-Programmable Gate Array (FPGA) architectures
- Computer-Aided Design (CAD) tools for FPGAs
- Logic synthesis
- Hardware implementation of computer graphics and

digital communication algorithms
- Very large scale integrated circuit design

SELECTED ARTICLES/ PUBLICATIONS

Andy G. Ye and Jonathan Rose, 2005. Measuring and Utilizing the Correlation Between Signal Connectivity and Signal Positioning for FPGAs Containing Multi-Bit Building Blocks, Proceedings of the 2005 International Conference on Field Programmable Logic and Applications, Tampere, Finland, August, pp. 159-166.

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AREAS OF SPECIALIZATION

- Ultra high-speed CMOS circuits and systems for wireless and wireline data communications.
- CMOS-MEMS microsystems for voice detection.
- CMOS image sensing systems.
- Computer-aided analysis of mixed analog-digital systems.

SELECTED ARTICLES/ PUBLICATIONS

F. Yuan, 2006. CMOS Current-Mode Circuits for Data Communications. Springer-Verlag. ISBN: 0-387-29758-8, Dec.

F. Yuan and M. Li, 2006. A new CMOS class AB serial link transmitter with low supply voltage sensitivity, Analog Integrated Circuits and Signal Processing, Vol. 49, No. 2, pp. 171-180, November.

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AREAS OF SPECIALIZATION

- Multimedia signal processing
- Audio coding

SELECTED ARTICLES/ PUBLICATIONS

S. Erkucuk, S. Krishnan and M. Zeytinoglu, 2003. A Robust Audio Watermarking Algorithm Based on Chirp Detection, submitted to IEEE Transactions on Signal Processing,.

M. Zeytinoglu, and K.M. Wong, 1995. Detection of harmonic sets, IEEE Transactions on Signal Processing, Vol. 43, No. 11, pp. 2618-2630, November.

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M. Zeytinoglu and M. Mintz, 1988. Robust fixed size confidence procedures for a restricted parameter space, Annals of Statistics, Vol. 16, pp. 1241-1253.

M. Zeytinoglu and M. Mintz, 1984. Optimal Fixed Size Confidence Procedures for a Restricted Parameter Space, Annals of Statistics, Vol. 12, No. 3, pp. 945-957.

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AREAS OF SPECIALIZATION

- Multimedia Signal Processing and Communications
- Wavelets, Filterbanks and Time-Frequency/ Time-Scale Analysis
- Pattern Classification and Statistical Signal Processing
- Bioengineering and Bioinfomatics Applications
- E-Commerce and Financial Applications

SELECTED ARTICLES/ PUBLICATIONS

Yuan, H., and Zhang, Xiao-Ping, 2006. Multiscale fragile watermarking based on the Gaussian mixture model, in IEEE Trans. on Image Processing, pp. 3189-3200, Vol. 15, No. 10, October.

Zhang, Xiao-Ping, and Chen, Z., 2006. An automated video object extraction system based on spatiotemporal independent component analysis and multiscale segmentation, in EURASIP Journal on Applied Signal Processing, Special Issue on Information Mining from Multimedia Databases, Vol.

Ma, L., Zhang, Xiao-Ping, Si, J., Abousleman, G.P., 2005. Bi-directional gradient labeling and registration for gray-scale image segmentation, IEEE Trans. on Image Processing, Vol. 14, No. 12, pp. 2073-2081, December.

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Zhang, Xiao-Ping, 2001. Thresholding neural network for adaptive noise reduction, IEEE Trans. on Neural Networks, Vol. 12, No. 3, pp. 567-584, May.

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AREAS OF SPECIALIZATION

- Wireless/digital Communications
- Wireless Channel Modelling
- Wireless Sensor Networks
- Digital Signal Processing

SELECTED ARTICLES/ PUBLICATIONS

L. Zhao, J. W. Mark and J. Ding. 2006. Power Distribution/Allocation in Multirate Wideband CDMA Systems. IEEE Transaction on Wireless Communications. Sep. 2458-2467.

L. Zhao, J. W. Mark and G. Yao. 2006. Mobile Positioning Based on Relaying Capability of Hybrid Wireless Networks. IEE Proceedings on Communications. Oct. 762-770.

J. Ding, W.Pye and L. Zhao. 2006. Some Results on Structured M-matrices With An Application to Wireless Communications. Linear Algebra and Applications. 608-614.

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L. Zhao and J. W. Mark. 2004. Mobile Speed Estimation Based on Average Fading Slope Duration. IEEE Transaction on Communications

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AREAS OF SPECIALIZATION

- System Identification and Control
- Engineering Education
- Active & Collaborative Learning Strategies
- Blended or Hybrid (i.e. Technology-assisted) Learning
- Faculty Development

SELECTED ARTICLES/ PUBLICATIONS

Zywno, M.S., 2005. How to Survive, and Thrive, in a Large Class, In A. Fancy & M. Lerch (Eds), Making a Difference/Toute la différence: A Celebration of the 3M Teaching FellowshipHommage au Prix d'enseignement 3M, Society for Teaching and Learning in Higher Education, Halifax, Canada.

Zywno, M.S., 2003. Using Collaborative Learning and Peer Assessment in an Undergraduate Engineering Course—a Case Study, UICEE World Transactions on Engineering and Technology Education, Australia, Vol. 2, No. 2, pp. 233-236.

Zywno, M.S., 2002. Instructional Technology, Learning Styles and Academic Achievement, Session 2422, Proceedings of the 2002 ASEE Annual Conference and Exposition, Montreal, QC, June 16-19, 2002. Best Paper Award for Professional Interest Council V: Continuing Professional Development, and Co-Winner of the Best Overall Paper at the Conference Award. There were 2,452 papers, in 6 PIC categories, presented at the conference.

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AREAS OF SPECIALIZATION

- Discrete mathematics
- Combinatorics
- Design Theory
- Graph Theory

SELECTED ARTICLES/ PUBLICATIONS

P. Danziger, E. Mendelsohn, G. Quattrocchi. 2004. On the Chromatic Index of Path Decompositions, Discrete Mathematics. 284 No. 1-3, 107-121.

P. Danziger, E. Mendelsohn. 2003. Bicolour graphs of Steiner triple systems. Discrete Math. 261, No. 1-3, 157-176.

Danziger, P. and B. Stevens, Class-Uniformly Resolvable Designs. 2001. Journal of Combinatorial Designs 9(2):79.

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Danziger, P. and E. Mendelsohn. 1997. Intercalates everywhere. Journal of the London Mathematical Society, Septses 245:69-88.

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AREAS OF SPECIALIZATION

- Computational Algebra
- Model Theory
- Algorithms
- Graph Theory

SELECTED ARTICLES/ PUBLICATIONS

Delic, D. 2005. Decidable locally finite discriminator varieties arising from dihedral varieties of groups, Journal of Pure and Applied Algebra 198:75-92

Bonato A., D. Delic. 2004. A note on orientations of the infinite random graph, European Journal of Combinatorics 25:921-926

Bonato, A., P. Cameron, D. Delic and S. Thomassé. 2002. Generalized Pigeonhole Properties of Graphs and Oriented Graphs. European Journal of Combinatorics 23:257-274.

Delic, D. 2001. Finite Equational Bases for Flat Graph Algebras. Journal of Algebra 246:453-469.

Delic, D. 2000. A Finitely Axiomatizable Undecidable Equational Theory With Recursively Solvable Word Problems. Transactions of the American Mathematical Society 352:3065-3101.

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AREAS OF SPECIALIZATION:

- Multidimensional Stochastic Processes
- Time Series Analysis
- Dependence Structures
- Financial Mathematics
- Biostatistics

SELECTED ARTICLES/ PUBLICATIONS

M. Escobar, L. Seco. 2006. A Partial Differential Equation for Credit Derivatives Pricing., CRM Partial Differential Equations and their applications, Volume 41.

U. Ansejo, M. Escobar, L. Seco and A. Vergara. 2006. Correlation Breakdown in the Valuation of Collateralized Fund Obligations., Journal of Alternative Investments, Winter.

M. Escobar and L. Seco. 2005. Dependence Structures and the Pricing of CDOs. 13th INFORMS Applied Probability Conference, Ottawa.

M. Escobar, L. Seco. 2002. Non-Gaussian Mark to Future for Energy Forwards and Futures Algo Research Quarterly, Spring, 67-78, 5 (1).

O. Criossant, G. Comezana, M. Escobar, P. Fernandez, N. Hernandez. and L. Seco. 2002. Nongaussian Multivariate Simulations in Mark-to-Future calculations. Proceedings of the Mercado de Futuros, Madrid.

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AREAS OF SPECIALIZATION

- Ergodic Theory
- Signal Processing
- Mathematical Finance

SELECTED ARTICLES/ PUBLICATIONS

Ferrando, S.E. and A.J. Bernal, Localized Monte Carlo algorithm to compute prices of path dependent derivatives on trees. International Journal of Theoretical and Applied Finance, Vol. 8, No. 5, August 2005, 1-22.

Ferrando, S.E., P.J. Catuogno and A.L. Gonzalez. 2003. Lower bounds for generalized upcrossings of ergodic averages. Illinois Journal of Mathematics 45(3):633-648.

Ferrando, S.E., L.A. Kolasa and N. Kovacevic. 2002. Algorithm 820: A Flexible implementation of matching pursuit for Gabor functions on the inverval. ACM Transactions of Mathematical Software (TOMS) 28(3):337-353.

Catuogno, P.J. and S.E. Ferrando. 2001. Pointwise Asymptotics for the jumps of ergodic averages. New York Journal of Mathematics 7:59-69.

Ferrando, S.E., E.J. Doolittle, A.J. Bernal and L.J. Bernal. 2000. Probabilistic Matching Pursuit with Gabor Dictionaries. Signal Processing 80(10):2099-2120.

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AREAS OF SPECIALIZATION:
- Nonlinear splines
- Exponential splines
- Approximation on the sphere

SELECTED ARTICLES/ PUBLICATIONS

Grandison, C. 1997. Behaviour of Exponential Splines as Tensions Increase Without Bound. Journal of Approximation Theory 89(3):289-307.

Grandison, C. 1999. Computing Nonlinear Splines. Presented at the Eighth International Colloquium on Numerical Analysis and Computer Sciences with Applications, Plovdiv, Bulgaria.

Grandison, C., and A. Kushpel. 2003. Optimal sk-Spline Approximation of Sobolev's Classes on the 2-Sphere. Proceedings of the Fourth Congress of the International Society for Analysis, its Applications and Computation, 2003. H. Begehr et al., (Editors). World Scientific Publishing Co., New Jersey. (ISBN:981-256-398-9) pp. 71-80.

Kushpel, A., C. Grandison and D. Ha. 2006. Optimal sk-Spline Approximation and Reconstruction on the Torus and Sphere. International Journal of Pure and Applied Mathematics. 29:4, pp. 469-490.

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AREAS OF SPECIALIZATION:
- Cryptography
- Cryptanalysis
- Information security management
- (Wired, wireless) network security
- Computational algebra

SELECTED ARTICLES/ PUBLICATIONS

C. Kim. 2006. RFID and Hash Algorithm. 2006 AKCSE 20th Anniversary Symposium.

H. Nguyen, J. Park, S. Yohn and C. Kim. 2006. Gene Selection for Cancer Classification based on Feature Ranking of Random Forest. ICCA 2006, LNCS

Hong, K.-Y. and C. Kim. 2001. On a Network Security Model for the secure Information Flow on Multilevel Secure Network. 3rd International Conference ICICS, LNCS (Lecture Note on Computer Science) 2229:364-370.

Abdukhalikov, K. and C. Kim. 1998. Fuzzy Multilinear Mappings. J. of Fuzzy Mathematics. 6(4):861-871.

Abdukhalikov, K. and C. Kim. 1998. Fuzzy Linear Maps. J. of Mathematical Analysis and Its Applications 220(1):1-12.

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AREAS OF SPECIALIZATION
- Harmonic Analysis
- Image and Signal Processing
- Software Design of Numerical Algorithms

SELECTED ARTICLES/ PUBLICATIONS

L. A. Kolasa, S. E. Ferrando, and N. Kovacevic. 2002. Algorithm 820: A Flexible Implementation of Matching Pursuit for Finite Gabor Sequences. ACM Transactions on Mathematical Software, 28:337-353.

L. A. Kolasa, S. E. Ferrando and N. Kovacevic. 2002. Software for Algorithm 820: A Flexible Implementation of Matching Pursuit for Finite Gabor Sequences". Collected Algorithms (CALGO) of the ACM. www.acm.org/calgo.

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L. A. Kolasa, T. H. Wolff. 1999. On Some Variants of the Kakeya Problem. Pacific Journal of Mathematics. 190:111-154

L. A. Kolasa. 1998. Oscillatory Integrals With Nonhomogeneous Phase Functions Related to Schrodinger Equations. Canadian Bulletin of Mathematics. 41:306-317.

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AREAS OF SPECIALIZATION
- Differential Equations
- Nonlinear Functional Analysis and Applications

SELECTED ARTICLES/ PUBLICATIONS

K. Q. Lan. 2006. Multiple positive solutions of semi-positone Sturm-Liouville boundary value problems, Bull. London Math. Soc., 38: 283-293.

K. Q. Lan. 2006. Eigenvalue criteria for existence of multiple positive solutions of nonlinear boundary value problems of local and nonlocal type, Topol. Methods Nonlinear Anal., 27 (1): 91-116. (with J. R. L. Webb)

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K. Q. Lan. 2006. Positive characteristic values and optimal constants for three-point boundary value problems, Proc. Conf. on Differential & Difference Eqs. Appl., 623-633 (Ed by R. P. Agarwal and K. Perera).

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AREAS OF SPECIALIZATION

- Computational Algebra
- Commutative Algebra
- Topological Algebra

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AREAS OF SPECIALIZATION

- Foundations of Quantum Mechanics
- Statistical Mechanics
- Exactly solvable models

SELECTED ARTICLES/ PUBLICATIONS

Ord, G.N. and R.B. Mann. 2003. Entwined paths, Difference Equations, and the Dirac Equation. Phys. Rev. A 67 022105.

Ord, G.N. and R.B. Mann. 2003. Entwined Pairs and Schroedinger's Equation. Annals of Physics 308(2): 478-492.

Ord, G.N. and J.A. Gualtieri. 2002. The Feynman Propagator from a Single Path. Phys. Rev. Letters 89, 250403.

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AREAS OF SPECIALIZATION

- Fluid Mechanics
- Hydrodynamic Stability
- Numerical Methods
- Gravity Currents

SELECTED ARTICLES/ PUBLICATIONS

Pascal, J.P. 2006. Instability of power-law fluid flow down a porous incline. J. Non-Newtonian Fluid Mech. 133:109-120.

Pascal, J.P., T.B. Moodie and S.J.D. D'Alessio. 2005. Stratified two-layer thermally-enhanced gravity-driven flows. J. Eng. Sci. 43(1-2):59-78.

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Pascal, J.P. 2003. A two-layer model for a non-Newtonian gravity current subjected to wind shear. Acta Mechanica 162(1-4):83-98.

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AREAS OF SPECIALIZATION

- Non-Newtonian Fluid Dynamics
- Reaction Diffusion Equations
- Stochastic Processes
- Numerical Methods
- Blood Flow

SELECTED ARTICLES/ PUBLICATIONS

Rohlf, K., Glass, L., and R. Kapral. 2006. Spiral Wave Dynamics in Excitable Media with Spherical Geometries. Chaos 16: 037115.

Drapaca, C.S., Tenti, G., Rohlf, K., and S. Sivaloganathan. 2006. A Quasilinear Visco-elastic Constitutive Equation for the Brain: Application to Hydrocephalus. Journal of Elasticity 85(1): 65-83.

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Liu, X. and K. Rohlf. 1998. Impulsive control of a Lotka-Volterra system. IMA J. Math. Control & Information 15:269-284.

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AREAS OF SPECIALIZATION

- Universal Algebra
- Partially Ordered Monoids

SELECTED ARTICLES/ PUBLICATIONS

Lawrence, J., Tasic, B. 2005. HSP≠SHPS for Commutative Rings with Identity. Proceedings of the American Mathematical Society. Vol. 134, No4: 943-948.

Tasic, B. 2004. A Note on Homomorphic Images, Subalgebras and Various Products. Algebra Universalis. 52: 431-438.

Tasic, B. 2001. On the Partially Ordered Monoid Generated by the Class Operators H, S, P, Ps. Journal of Algebra. 245 No1: 1-19.

Tasic, B. 2001. Partially Ordered Monoids Generated by H, S, P, and H, S, Pf are Isomorphic. Semigroup Forum. 62 : 485-490.

Masulovic, D., Tasic, B. 2001. Operators on Classes of Coalgebras. Theoretical Computer Science. 269 N01-2 : 419-431.v

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AREAS OF SPECIALIZATION

- Application of the moving electromagnetic field (and magnetic field) for: a) separation of magnetic raw materials, and b) modification of physical properties (for example strength or porosity) of smelting casting sands and concrete
- Investigation of electron, magnetic, electric and other physical properties of metallic glasses (thin magnetic layers)
- Applied probability, statistics and stochastic processes (Visiting professor at Hallam-Sheffield University, UK, 1999-2004)

SELECTED ARTICLES/ PUBLICATIONS

Todorow, B. 2004. Presentation of some topics of Applied Statistics. GREET May Conference, Ryerson University.

Todorow, B. 1999-2003. Presentation of some topics of Applied Statistics in the Seminars of the Graduate School of Computing Management, Hallem-Sheffield University, UK (organized yearly for 2 days) Ryerson.

Todorow, B. (group authorship) 2001. High precision data acquisition and control system for the Hall Effect in the thin magnetic layers (metallic glasses). Acta Universitatis Lodziensis (Poland).

Todorow, B. 2001. Correlations in education. GREET May Conference, Ryerson University.

Todorow, B., von Bogen, O., and S. Kanellis. 2000. Apparatus for real-time observations of the annealing process of metallic glasses. Elsevier Science Publishing, Special Edition, SMM-14.

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AREA OF SPECIALIZATION

- Ergonomics

SELECTED ARTICLES/ PUBLICATIONS

Das, B. and Behara, D.N. 1998. Determination of three-dimensional workspace for industrial workstation design, Human Factors, Vol. 40, No. 4, pp. 633-646.

Behara, D.N. and Das, B. 1998. Estimation of Workspace for Industrial Workstation Design from Structural Anthropometric Measurements, Proceedings of the Symposium on Industrial Engineering and Management, Canadian Society for Mechanical Engineering (CSME) Forum, Vol. 3, pp. 257-263.

Behara, D.N. and Das, B. 1998. Estimation of Industrial Workspce As A Function of Body Dimensions, Advances in Occupational Ergonomics and Safety, IOS Press, pp. 178-181.

Das, B. and Behara, D.N. 1995. Determination of the normal horizontal working area: a new model and method, Ergonomics, Vol. 38, No. 4, pp. 734-748.

Das, B. and Behara, D.N. 1993. A new method for the determination of workspace for industrial workstation design, Proceedings of the 26th Annual Conference of the Human Factors Association of Canada, pp. 127-132.

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AREAS OF SPECIALIZATION

- Physical metallurgy of steels
- Welding and Weldability
- Formability
- Materials Characterization

SELECTED ARTICLES/ PUBLICATIONS

G. K.C. Tawade, A. P. Lee, Gary Boudreau and S.D. Bhole. 2005. Robust Schedules for Spot Welding Zinc Coated Advanced High Strength Automotive Steels, SME Technical Paper, TP05PUB99, SME, Dearborn, Michigan, pp. 1-13.

G. Tawade, A. Lee, G. Boudreau and S.D. Bhole. 2004. Robust Schedules for Spot Welding Zinc Coated Advanced High Strength Steels for Automotive Applications, Sheet Metal Welding Conference XI, AWS, Sterling Heights, Detroit, Michigan, May 11-14.

C. Liu and S.D. Bhole. 2002. Fracture Behaviour In A Pressure Vessel Steel Weld, Journal of Materials and Design, Vol. 23, No. 4, pp. 371-376.

A. Chidambaram and S.D. Bhole. 1996. Particle Denuded Zones in Alumina Reinforced Aluminum Matrix Composite Weldments, Scripta Mater., Vol. 35, No. 3, pp. 373-378.

S.D. Bhole and G.K. Adil. 1992. HAZ Hardness and Microstructure Predictions of Arc Welded Steels: II- CCT Diagram Method, Canadian Metallurgical Quart., Vol. 31, No.2, pp. 159-165, April-June.

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AREAS OF SPECIALIZATION

- Thermodynamics
- Fluid mechanics

SELECTED ARTICLES/ PUBLICATIONS

Budny, R.S. 1990. A microcomputer simulation of the joint Ryerson/UTIAS hypersonic gun tunnel. In Proceedings of the CSME Mechanical Engineering Forum 1990, Vol, I, pp. 37-42, University of Toronto Campus, June 3-9.

Budny, R.S. 1990. The introduction of microcomputer simulation into senior level mechanical engineering courses at Ryerson. In Proceedings of the CSME Mechanical Engineering Forum 1990, Vol. I, pp. 277-281, University of Toronto Campus, June 3-9.

Budny, R.S., J.G. Kawall, and J.F. Keffer. 1979. Vortex street evolution in the wake of a circular cylinder. In Second symposium on Turbulent Shear Flows,Imperial College, London, July 2-4.

Budny, R.S., J.G. Kawall, and J.F. Keffer. 1979. Decay of the vortex street behind a circular cylinder. In Proceedings of the Seventh Canadian Congress of Applied Mechanics, pp. 645-646, Sherbrooke, May 27-June 1st.

Keffer, J.F., R.S. Budny, and J.G. Kawall. 1978. Digital technique for the simultaneous measurement of velocity and temperature. Review of Scientific Instruments, 49(9):1343-1346. September.

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AREAS OF SPECIALIZATION

- CFD
- Fuel Cell Technology
- Adaptive Finite Element Methods
- Aerodynamics

SELECTED ARTICLES/ PUBLICATIONS

J, Cao and N. Djilali. 2005. Numerical modeling of PEM fuel cells under partially hydrated membrane conditions, ASME Journal of Energy Resources Technology, Vol. 127, March, pp. 26-36.

J. Cao. 2005. Application of a posteriori error estimation to finite element simulation of incompressible Navier-Stokes flow, Computers & Fluids, Vol. 34/8, pp. 972-990.

J. Cao. 2005. Application of a posteriori error estimation to finite element simulation of compressible Navier-Stokes flow, Computers & Fluids, Vol. 34/8, pp. 991-1024.

J. Cao. 2005. A posteriori error estimate techniques for coupledNavier-Stokes equations and energy equation, Journal of Nonlinear Analysis, Vol. 63/ 5-7, pp. e1475-e1486.

H. Wu and J. Cao. 2005. A three dimensional model of membrane in PEM fuel cell, Modern Physics Letters B, Vol. 19, No. 28-29, December, pp. 1683-1686.

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AREAS OF SPECIALIZATION

- Advanced manufacturing
- Metrology
- Machine vision
- Rapid prototyping
- CAD/CAM

SELECTED ARTICLES/ PUBLICATIONS

Chan V. Learning CAD/CAM and CNC Machining through a Mini-Car/Catapult Project, International Journal for Engineering Education, Vol. 20, No. 5, pp. 726-732.

Chan V and Samaan M. 2004. Spherical/cylindrical laser scanner for geometric reverse engineering, Proceedings of Three-Dimensional Image Capture and Applications VI, SPIE, 19-20 Jan., San Jose, California, Vol. 5302, pp. 33-40.

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AREAS OF SPECIALIZATION

- Microstructural characterization;
- Materials joining and welding, and heat treatment;
- Mechanical properties, fatigue, fracture, failure analysis and life prediction;
- Development and testing of advanced materials (biomaterials, nanomaterials, and composite materials);
- Lightweight materials for automotive and aerospace applications.

SELECTED ARTICLES/ PUBLICATIONS:

Z. Zhang and D.L. Chen. 2006. Consideration of Orowan strengthening effect in particulate-reinforced metal matrix nanocomposites: A model for predicting their yield strength, Scripta Materialia, 54(7), 1321-1326.

L. Xiao, D.L. Chen and M.C. Chaturvedi. 2005. Low cycle

fatigue behavior of Inconel 718 superalloy with different concentrations of boron at room temperature, Metallurgical and Materials Transactions A, 36(10), 2671-2684.

D.L. Chen and Z. Wang. 2004. Derivation of applied stress-crack opening displacement relationships for the evaluation of effective stress intensity factor range, International Journal of Fracture, 125, 371-386.

S.X. Xu and D.L. Chen. 2003. Geometric correction factors for center cracked specimens subjected to nonlinear bridging stresses in the shear lag model, Engineering Fracture Mechanics, 70(6), 823-829.

D.L. Chen and M.C. Chaturvedi. 2001. Effects of welding and weld heat-affected zone simulation on the microstructure and mechanical behavior of a 2195 aluminum-lithium alloy, Metallurgical and Materials Transactions A, 32, 2729-2741.

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AREAS OF SPECIALIZATION

- Power generation and energy
- HVAC
- Energy conservation
- Cogeneration

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AREAS OF SPECIALIZATION

- Systems Engineering
- Multiple Participant-Multiple Objective Decision Making
- Decision Support Systems
- Risk Analysis
- Reliability Engineering

SELECTED ARTICLES/ PUBLICATIONS

D.-Z. Zeng, L. Fang, K.W. Hipel, and D.M. Kilgour, 2006. Generalized metarationalities in the graph model for conflict resolution. Discrete Applied Mathematics, Vol. 154, No. 16, pp. 2430-2443.

D.J. Noakes, L. Fang, K.W. Hipel, and D.M. Kilgour, 2005. The Pacific Salmon Treaty: A century of debate and an uncertain future. Group Decision and Negotiation, Vol. 14, No. 6, pp. 501-522.

K.W. Li, K.W. Hipel, D.M. Kilgour, and L. Fang, 2004. Preference uncertainty in the graph model for conflict resolution. IEEE Transactions on Systems, Man, and Cybernetics, Part A, Vol. 34, No. 4, pp. 507-520.

L. Fang, K.W. Hipel, D.M. Kilgour, and X. Peng, 2003. A decision support system for interactive decision making, Part 1: Model formulation. IEEE Transactions on Systems, Man, and Cybernetics, Part C, Vol. 33, No. 1, pp. 42-55.

L. Fang, K.W. Hipel, D.M. Kilgour, and X. Peng, 2003. A decision support system for interactive decision making, Part 2: Analysis and output interpretation. IEEE Transactions on Systems, Man, and Cybernetics, Part C, Vol. 33, No. 1, pp. 56-66.

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AREAS OF SPECIALIZATION

- Combustion and combustion diagnostics
- Fluidized beds
- Heat transfer
- Thermofluids

SELECTED ARTICLES/ PUBLICATIONS

Li, H., Friedman, J. 2005. Natural Gas Combustion in a Fluidized Bed Heat Treating Furnace. Comb. Sci. and Tech. 178:1.

Friedman, J.A., Naylor, D., Koundakjian, P., Rosero, D. 2005. Heat Transfer to Small Cylinders Immersed in a Fluidized Bed. ASME 18th International Conference on Fluidized Bed Combustion, Paper # FBC05-078.

Copeland, C., Friedman, J., Renksizbulut, M. Planar. 2005. Temperature Imaging Using Thermally-Assisted Laser-Induced Fluorescence of OH in a Methane-Air Flame. Proceedings of 2005 Spring Technical Meeting, The Combustion Institute, Canadian Section, Halifax, Nova Scotia, May, 220-225.

Friedman, J., Renksizbulut, M., Zaheer, A. 2004. The Interaction of an Annular Air Jet with a Methanol Spray Flame in a Cylindrical Combustion Chamber. CSME Transactions, 28:3-4, 93-602.

Friedman, J.A., Renksizbulut, M. 1999. Investigating a Methanol Spray Flame Interacting with an Annular Air Jet Using Phase-Doppler Interferometry and Planar Laser-Induced Fluorescence. Combustion and Flame, 117:661-684.

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AREAS OF SPECIALIZATION

- Sustainable/novel energy (fuel cell, solar energy, cogeneration) conversion systems
- Building energy systems simulation
- Advanced integrated building

HVAC systems
- Building energy efficiency and end-use modelling
- Multiphase flow (fluidized beds and cyclone separators) measurement and modelling

SELECTED ARTICLES/ PUBLICATIONS

Pataki, D.E., Alig, R.J., Fung. A.S., Golubiewski, N.E., Kennedy, C.A., McPherson, E.G., Nowak, D.G., Pouyat, R.V., and Lankao, P. Romero. 2006. Urban ecosystems and the North American carbon cycle, Journal of Global Change Biology, Vol. 12, pp. 1-11.

Aydinalp, M., Ugursal, V. I., Fung, A. S. 2003. The Effects of Socioeconomic Factors on the Household Appliance, Lighting and Space Cooling Electricity Consumption, Int. J. of Global Energy Issues (IJGEI), Vol. 20, No. 3, pp. 302-315.

Fung, Alan S., Aulenback, Adam, Ferguson, Alex, and Ugursal, V. Ismet. 2003. Standby Power Requirements of Household Appliances in Canada, Energy and Buildings, Vol. 35, Iss. 2, pp. 217-228.

Fung, A. S. and Hamdullahpur, F. 1993. Effect of Bubble Coalescence on Entrainment in Gas Fluidized Beds, Powder Technology, Vol. 77, No. 3, pp. 251-265.

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AREAS OF SPECIALIZATION

- Intelligent manufacturing systems
- Automated supervision
- Chatter suppression

SELECTED ARTICLES/ PUBLICATIONS

Ghasempoor A., Wild P., Auger M., Mueller R. 2003. Automatic detection of lack of fusion defects in CO2 laser gear welding, Journal of Laser Applications, Vol. 15, no. 2, pp. 77-83, May.

Ghasempoor A., Moore T. N. and Jeswiet J. 1999. Real Time Implementation of On-line Tool Condition Monitoring in Turning, International Journal of Machine Tools and Manufacture, 39, 1883-1902.

Ghasempoor A., Sepehri N. 1998. A Measure of Stability for Mobile Manipulators With Application to Heavy-Duty Hydraulic Machines, ASME Journal of Dynamic systems, measurement, and control, Vol. 120, No. 3, 360-370.

Ghasempoor A., Jeswiet J., Moore T.N. 2003. Automatic Adjustment of Cutting Conditions in Rough Turning, Journal of Engineering Manufacture, Vol. 217 No. B10; pp. 1393-1400.

Ghasempoor A., Wild P. 2003. Auger M., Mueller R., Automatic detection of lack of fusion defects in CO2 laser gear welding, Journal of Laser Applications, Vol. 15, No. 2, pp. 77-83, May.

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AREAS OF SPECIALIZATION

- Micro-Electro-Mechanical System (MEMS)
- Micro Sensors and Actuators
- Biomedical MEMS
- Optical MEMS
- RF MEMS

SELECTED ARTICLES/ PUBLICATIONS

S. He and R. Ben Mrad. 2006. Performance assessment of a multi-level repulsive-force out-of-plane microelectrostatic actuator, Can. Journal of Electrical and Computer Engineering, Vol. 31, pp. 71-75.

S. He and R. Ben Mrad. 2005. Large-stroke microelectrostatic actuators for vertical translation of micromirrors used in adaptive optics, IEEE Transactions on Industrial Electronics, Vol. 52, pp. 974-983.

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AREAS OF SPECIALIZATION

- Operations research
- Financial engineering
- Supply chain
- Contract valuation
- Performance evaluation of manufacturing systems

LIST OF SELECTED ARTICLES/ PUBLICATIONS

M. I. M. Wahab. 2005. Measuring machine and product mix flexibilities of a manufacturing system, International Journal of Production Research, 43, 3773-3786.

M. I. M. Wahab and Sun Ru. 2000. The impact of E-commerce on supply chain management, International Forum cum Conference on Information Technology and Communication, Thailand, 181-187.

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AREAS OF SPECIALIZATION

- Modelling Learning and Forgetting Processes
- Workforce Cross-Training and Deployment
- Supply Chain Management and Reverse logistics
- Thermodynamic Modelling of Industrial Systems

SELECTED ARTICLES/ PUBLICATIONS

Jaber, M.Y. 2006. Learning and forgetting models and their applications, Handbook of Industrial & Systems Engineering, A.B. Badiru (Editor), CRC Press (Taylor & Francis Group), New York, NY, pp. 30.1-30.27.

Jaber, M.Y., Osman, I.H. 2006. Coordinating a two-level supply chain with delay in payments and profit sharing, Computers & Industrial Engineering 50(4): 398–400.

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AREAS OF SPECIALIZATION

- Reliability, Safety and Quality Engineering
- Medical Device Reliability Evaluation
- Health Care Reliability
- Risk Management
- Manufacturing Systems

SELECTED ARTICLES/ PUBLICATIONS

Jenab K., Dhillon B.S. 2006. Reversible Multi-State K-out-of-N:G/F/L System, Reliability Engineering and System Safety, Vol. 91/7, pp. 765-771.

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AREAS OF SPECIALIZATION

- Turbulence
- Hot-Wire Anemometry
- Aeroacoustics
- Noise Control

SELECTED ARTICLES/ PUBLICATIONS

S. Yarusevych, P.E. Sullivan, J.G. Kawall. 2005. Airfoil Boundary Layer Separation and Control at Low Reynolds Numbers, Experiments in Fluids, Vol. 38, pp. 545-547.

S. Yarusevych, J.G. Kawall, P.E. Sullivan. 2003. Effect of Acoustic Excitation on Airfoil Performance at Low Reynolds Numbers, AIAA Journal, Vol. 48, No. 8, pp. 1599-1607.

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AREAS OF SPECIALIZATION

- Modelling and Simulations of Energy Systems
- Heat and Mass Transfer in Soils
- Natural Convection

SELECTED ARTICLES/ PUBLICATIONS

Leong, W.H., V.R. Tarnawski, F. Gori, G.D. Buchan and J. Sundberg. 2004. Inter-particle contact heat transfer model: an extension to soils at elevated temperatures. Int. J. Energy Res., 29:131-144.

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AREAS OF SPECIALIZATION

- Dynamical system theory
- Complex system

SELECTED ARTICLES/ PUBLICATIONS

D.C. Lin. 2003. Robustness and Perturbation of Cascade Heart Rate Variability, Physical Review E, Vol. 67, pp. 1914-1921.

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AREAS OF SPECIALIZATION

- Solid mechanics
- Experimental mechanics
- Electronic packaging mechanics
- Microelectronics reliability
- Interferometric and computer vision metrology for non-destructive testing and stress analysis

SELECTED ARTICLES/ PUBLICATIONS

Hua Lu, Jesse Zhou, Rich Golek, Ming Zhou. 2004. Hybrid Reliability Assessment For Packaging Prototyping, manuscript accepted by Journal of Microelectronics Reliability, Nov.

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AREAS OF SPECIALIZATION

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- Laser Interferometry
- Computational Fluid dynamics
- Metal Casting

SELECTED ARTICLES/ PUBLICATIONS

Naylor, D., P.H. Oosthuizen, 2006. Energy Recovery from an Industrial Clothes Dryer Using a Condensing Heat Exchanger, Chapter 28, Heat Transfer Calculations, McGraw-Hill, pp. 28.1-28.12.

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AREAS OF SPECIALIZATION

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- Production Ergonomics
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SELECTED ARTICLES/ PUBLICATIONS

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AREAS OF SPECIALIZATION

- Structural mechanics
- Intelligent structures
- Dynamics
- Vibration
- Finite element methods

SELECTED ARTICLES/ PUBLICATIONS

Oguamanam, D.C.D., Hansen, J.S., and Heppler, G.R. 2004. Nonlinear Transient Response of Thermally Loaded Laminated Panels. J. of Appl. Mech., 71, pp. 49-56.

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AREAS OF SPECIALIZATION

- Solid Particle Erosion
- Finite Element Analysis
- Orthopaedic Biomechanics
- Micro-manufacturing
- Solid Mechanics

SELECTED ARTICLES/ PUBLICATIONS

C. Gomes Ferreira, D. Ciampini, and M. Papini. 2004. The effect of inter-particle collisions in erosive streams on the distribution of energy flux incident to a flat surface, Tribology International 37:791-807.

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AREAS OF SPECIALIZATION

- Near-net-shape Foam, Die and SandCasting
- Magnesium and Aluminum Light Alloys and Cast Irons for Automotive and Aerospace Applications
- Mechanical Properties and Oxidation Behaviour of Castings
- Modeling, Innovation and Defect Elimination in Metalcasting

SELECTED ARTICLES/ PUBLICATIONS

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AREAS OF SPECIALIZATION

- Computational fluid dynamics
- Material science
- Flow in porous media
- Biomedical Engineering

SELECTED ARTICLES/ PUBLICATIONS

M. Sohail, T.J. Makriyannis and M.Z. Saghir. 2006. Three Dimensional Modeling of Ge1-xSix by the Traveling Solvent method: the Effect of Rotation and Misalignment of the Sample, Progress in Computational Fluid Dynamics, An International Journal, Vol. 6, No. 6, pp. 314-320.

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AREAS OF SPECIALIZATION:

- Product development processes
- Design theory and methodology
- Formal and informal design methods
- Information visualization
- Knowledge-based systems in design

SELECTED ARTICLES/ PUBLICATIONS

F.A. Salustri, A lightweight collaborative tool to support design research. In Wiki: a new wave in web collaboration, B.R.K. Jain and K.R. Prabhakar, eds., ICFAI University Press, pp. 80-100.

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F.A. Salustri and J. Parmar, Diagrammatic visualization of early product developmentn information. 2004. Paper DETC2004-57013, Proc ASME Design Theory and

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B. Ye and F.A. Salustri. 2003. Simultaneous tolerance synthesis for manufacturing and quality. 2003. Research in Engineering Design 14:98-106.

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AREAS OF SPECIALIZATION:

- Opto-Mechatronics and MEMS
- Robotics and Teleoperation
- High-Performance Machine Vision
- Intelligent Control and Automation
- Biomedical Technology

SELECTED ARTICLES/ PUBLICATIONS

Deng, L., Janabi-Sharifi, F., and Wilson, W.J., "Hybrid motion control and planning strategy for visual servoing," IEEE Trans. Industrial Electronics, vol. 52, no. 4, Aug. 2005, pp. 1024-1040.

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AREAS OF SPECIALIZATION:

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AREAS OF SPECIALIZATION

- Enterprise modelling
- Ontologies
- Temporal-ABC
- Cost intelligence
- Supply chain management
- AI

SELECTED ARTICLES/ PUBLICATIONS

K.Donald Tham, Mark S. Fox & Thomas K. Joseph. 2005. Attaining Lean Supply Chains with Enterprise Modeling and Temporal-ABC", Proceedings of International Conference for Operations Research Applications for Infrastructure Developments, ICORAID-2005, in collaboration with Operations Research Society of India (ORSI), Bangalore, India, December.

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K. Donald Tham & Henry M. Kim. 2002. Towards Strategic Planning with Ontology Based Enterprise Modelling and ABC, Proceedings of International Business and Economics Research Conference, IBER 2002, Las Vegas, USA, October.

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AREAS OF SPECIALIZATION

- Fatigue Damage Analysis
- Stress Analysis
- Composite Materials
- Micro-Electro-Mechanical Systems (MEMS)
- Biomechanics

SELECTED ARTICLES/ PUBLICATIONS

Varvani-Farahani, A., Haftchenari, H. and Panbechi, M. 2006. A Fatigue Damage Parameter for Life Assessment of Off-Axis Unidirectional Glass Fiber-Reinforced Composites, Journal of Composite Materials, 40 (18): 1659-1670.

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AREAS OF SPECIALIZATION

- Laser Nano and micro manufacturing
- Short pulse laser Fundamentals and application
- Lasers in micro electronics, photonics and MEMS application
- Micro and nano fabrication of bio-medical device
- Nano-particle generation

SELECTED ARTICLES/ PUBLICATIONS

K. Venkatakrisnan and B. Tan. 2006. Interconnection via drilling using radially polarized laser beam, J. Micromech. Microeng., 16, 2603-2607.

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AREAS OF SPECIALIZATION

- Vibrations
- Flexible Multibody Dynamics
- Contact Mechanics
- Nuclear Fuel Modelling
- Finite Element Methods

SELECTED PUBLICATIONS/ PRESENTATIONS

S. D. Yu and W. L. Cleghorn. 2005. Free Vibration Analysis of Symmetric Honeycomb Panels, Journal of Sound and Vibration, Vol. 284 (1-2), 189-204.

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AREAS OF SPECIALIZATION

- Cellular & Flexible Manufacturing Systems
- Simulation of Production and Service Systems
- Transportation Planning and Scheduling
- Computational Intelligence
- Metaheuristics

SELECTED ARTICLES/ PUBLICATIONS

Zolfaghari, S. and E.V. Lopez Roa. 2006. Cellular manufacturing versus a hybrid system: a comparative study, Journal of Manufacturing Technology Management, 17(7):942-961.

Azizi, N. and S. Zolfaghari. 2004. Adaptive temperature

control for simulated annealing: a comparative study. Computers and Operations Research, 31(14):2439-2451.

Zolfaghari, S. and M. Liang. 2003. A new genetic algorithm for the machine/part grouping problem involving processing times and lot sizes. Computers & Industrial Engineering. 45(4):713-731.

Zolfaghari, S. and M. Liang. 2002. Comparative study of simulated annealing, genetic algorithms and tabu search for solving binary and comprehensive machine grouping problems, International Journal of Production Research, 40(9): 2141-2158.

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AREAS OF SPECIALIZATION

- Physics Education
- Condensed Matter Physics
- Physical Chemistry

SELECTED ARTICLES/ PUBLICATIONS

T.Antimirova 2005. Follow-up Physics Courses for Life Sciences, The 2005 Canadian Association of Physicists (CAP) Congress, 2005, Vancouver, Canada.

M.C.Depew, T.Antimirova, G.Chen and J.K.S.Wan 1999. Bleaching mechanical pulps with H2O2: a unique alkali-free approach, Research on Chemical Intermadiates, 25, 5, pp. 411-506.

V.V.Laguta, T.V.Antimirova, M. D.Glinchuk, I.P.Bykov, J.Rosa, M.Zaritskii, L. Jastrabik, L. Soukup 1998. Distortion of Oxygen Octahedron in Antiferroelectric PbZrO3: ESR Evidence, Journal of the Corean Physicsl Society, 32, 700.

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AREAS OF SPECIALIZATION

- Biophysics
- in-vivo X-Ray Fluorescence
- Biostatistics
- Metabolic Modeling

SELECTED ARTICLES/ PUBLICATIONS

José A A Brito, Fiona E McNeill, Colin E Webber and David R Chettle 2005. Grid search: an innovative method for the estimation of the rates of lead exchange between body compartments. Journal of Environmental Monitoring 7: 241-247.

H.Nie, D.R.Chettle, C.E.Webber, J.A.Brito, J.M.O´Meara, F.E.McNeill 2005. X-Ray fluorescence data in the study of human bone lead metabolism. Journal of Environmental Monitoring, 7, 1069-1073.

Isabel Peixoto Callejo, José Américo Brito, José Wheinholtz Bivar, Fernando Jesus Fernandes João Leal Faria, et al. 2005 Predictors of Status of the Nonsentinel Axillary Nodes in Breast Cancer: An Analysis of 23 cases with Emphasis on Characteristics of the Sentinel Lymph Node, Clinical and Translational Oncology 7(1):18-22

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J Brito, FE McNeill, DR Chettle, CE Webber, S Wells, N Richard 2001. Longitudinal changes in bone lead concentration: implication for modeling of human bone lead metabolism. Journal of Environmental Monitoring 3: 343-351.

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AREAS OF SPECIALIZATION:

- Collective Nuclear Motion
- Algebraic Nuclear Models
- Schur Function Formalism
- Maple in the Teaching of Physics

SELECTED ARTICLES/ PUBLICATIONS

M.J. Carvalho, S. D'Agostino and D.J. Rowe, 2005. Plethysm and SCHUROPERA, Proceedings of Professor Brian G. Wybourne Commemorative Meeting Torun, Poland.

M.J. Carvalho, D.J . Rowe , C. Bahri and S. Karram, 2002. Optimal basis states for a microscopic calculation of vibrational wave functions of deformed rotational nuclei, Nuc. Phys. A. 703, 167- 187.

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M.J. Carvalho and D. J. Rowe, 1997. Transverse Form Factors in the Collective and Symplectic Models, Nuclear Physics A, 618, 65-86.

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AREAS OF SPECIALIZATION:

- Micro-computed tomography
- X-ray imaging
- Respiratory-gated micro-CT
- Contrast-enhanced micro-CT
- Small animal imaging

SELECTED ARTICLES/ PUBLICATIONS

Ford, N.L., Graham, K.C., Groom, A.C. MacDonald, I.C., Chambers, A.F., Holdsworth, D.W. 2006. Time-Course Characterization of the Computed Tomography Contrast Enhancement of an Iodinated Blood-Pool Contrast Agent in Mice Using a Volumetric Flat-Panel Equipped Computed Tomography Scanner, Invest. Radiol.; 41(4); pp. 384-90.

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AREAS OF SPECIALIZATION

- Radiation Therapy of Tumours
- CT image reconstruction
- Physics Education

SELECTED ARTICLES/ PUBLICATIONS

S. P. Goldman, J. Z. Chen, E. Wong and J. J. Battista 2006. Dose Rate Optimization for Intensity Modulated Arc Therapy, 48th Annual Meeting of the American Association of Physicists in Medicine

S. P. Goldman, J. Z. Chen and J. J. Battista 2005. Feasibility of a fast inverse dose optimization algorithm for IMRT via matrix inversion without negative beamlet intensities, Med. Phys. 32, 3007-3016

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AREAS OF SPECIALIZATION

- Ultrasound imaging and spectroscopy
- Ultrasound and thermal therapy
- Heat transfer in tissues
- Optoacoustic imaging

SELECTED ARTICLES/ PUBLICATIONS

Parmar N and Kolios MC. 2006. An Investigation of the Use of Transmission Ultrasound to Measure Acoustic Attenuation Changes in Thermal Therapy, Medical and Biological Engineering and Computing 44:583-591

A.S. Tunis, G.J. Czarnota, A. Giles, M.D. Sherar, J.W. Hunt and M.C. Kolios. 2005. Monitoring Structural Changes in Cells with High Frequency Ultrasound Signal Statistics, Ultrasound in Medicine and Biology 31(8), 1041-1049

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AREAS OF SPECIALIZATION

- Finite Element Analysis
- Bio-heat transfer
- Electromagnetism
- Ultrasound
- Thermal therapy

SELECTED ARTICLES/ PUBLICATIONS:

M. Jain, J. C. Kumaradas, F.J. Sharifi, and W.M. Whelan. 2006. Uncertainty and Sensitivity Analysis for a Tissue Laser Irradiation Tissue Model, Proceedings of the Canadian Conference of Electrical and Computer Engineers.

J.C. Kumaradas, M. Rihaoui, R.H. Kraus Jr., and B. Wright. 2005. Magnetic nano-particle interactions in Magnetocarcinotherapy, Proceedings of the 2005 Summer Bioengineering Conference.

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J.C. Kumaradas and M.D. Sherar. 2002. An Edge-element based Finite Element Model of Microwave Heating in Hyperthermia: Method and Verification, International Jour-nal of Hyperthermia, v18, p. 426.

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AREAS OF SPECIALIZATION

- Medical Physics
- Trace elements analysis in humans
- Bone aluminum, manganese and strontium
- X-ray fluorescence spectroscopy
- Neutron activation analysis

SELECTED ARTICLES/ PUBLICATIONS

M. Zamburlini, A. Pejović-Milić and D. R. Chettle. 2006. Evaluation of Geometries Appropriate for I-125 in vivo bone strontium X-ray Fluorescence Measurement, Journal of Radioanalytical and Nuclear Chemistry, Vol. 269 (3), pp. 625-629.

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AREAS OF SPECIALIZATION

- Biomedical optics
- Magnetic resonance imaging

SELECTED ARTICLES/ PUBLICATIONS

V. Toronov, X. Zhang, and A.G. Webb. 2006. A spatial and temporal comparison of hemodynamic signals measured using optical and functional magnetic resonance imaging during activation in the human primary visual cortex, Neuroimage, 34, 1136-48.

X. Zhang, V. Toronov, and A. G. Webb. 2006. An integrated measurement system for simultaneous functional magnetic resonance imaging and diffuse optical tomography in human brain mapping, Rev. Sci. Inst. 77, 114301.

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AREAS OF SPECIALIZATION:

- Biomedical optics
- Thermal and photodynamic therapies
- Optoacoustic imaging
- Optical sensors

SELECTED ARTICLES/ PUBLICATIONS

LCL Chin, WM Whelan and IA Vitkin. 2006. Information content of point radiance measurements in turbid media: implications for interstitial optical property quantification, Applied Optics, 45, 2101-2114.

Sean R H Davidson, I. Alex Vitkin, Michael D. Sherar and William M. Whelan. 2005. Characterization of measurement artifacts in fluoroptic temperature sensors: Implications for laser thermal therapy at 810 nm, Lasers in Surgery and Medicine, 36, 297-306.

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I. Alex Vitkin. 2005. A novel strategy for monitoring laser thermal therapy based on changes in optothermal properties of heated tissues, International Journal of Thermophysics, 26, 233-241.

Ying Fan, Andreas Mandelis, Gloria Spirou, I. Alex Vitkin and William M. Whelan. 2005. Laser photothermoacoustic frequency swept heterodyned lock-in depth profilometry in turbid tissue phantoms, Physical Review E, 72, 051908.

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AREAS OF SPECIALIZATION

- Photoacoustic tomography
- Novel imaging methods combining ultrasound and electromagnetic waves

SELECTED ARTICLES/ PUBLICATIONS:

Y. Xu and B. He. 2005. Magnetoacoustic tomography with magnetic induction, Phys. Med. Bio. 50 (21), 5175–5187.

Y. Xu and L.-H. V. Wang. 2004. Time reversal and its application to tomography with diffracting sources, Physical Review Letters, 92 (3), 033902.

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