

Auto INNOVATIONS

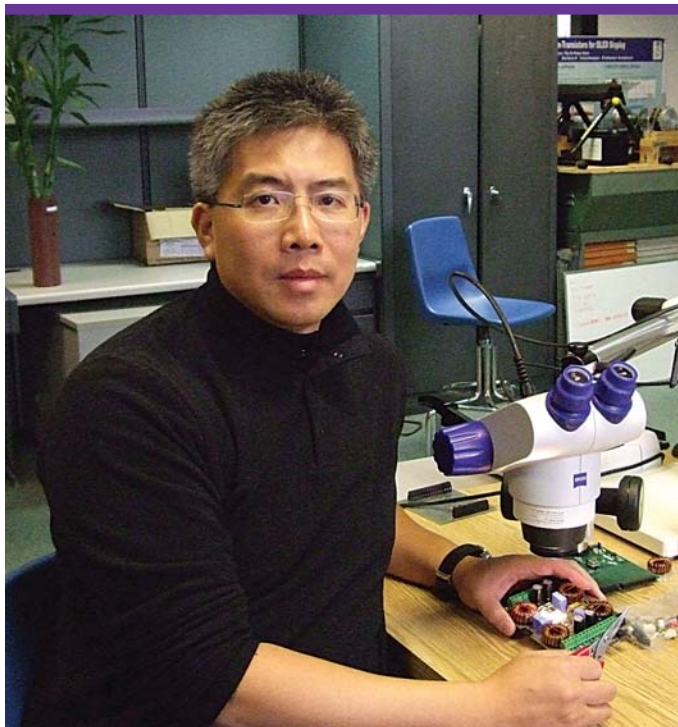


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Smart Electrical Connectors



Dr. Wai Tung Ng of the University of Toronto leads the project *Electrical Power Management and Safety Systems*.

New electric and hybrid vehicles bring the promise of reduced emissions but they also bring new safety challenges. The high-voltage electrical systems needed to operate these vehicles pose a potential threat to car mechanics, emergency personnel responding to accidents and possibly, vehicle occupants.

A team of researchers led by AUTO21 project leader Dr. Wai Tung Ng has developed a new smart connector to help mitigate these hazards. The project, *Electrical Power Management and Safety Systems*, is aimed at helping industry provide efficient and flexible power delivery to high voltage electrical systems while eliminating arcing and potential fire hazards. In addition, the incorporation of self diagnostic and power-line data communication capabilities will make this a true smart connector.

“One of the greatest challenges to developing an effective high voltage electrical system was how to help the system anticipate or recognize potential problems,” said Dr. Ng. “The smart connector can do this in a number of ways, including notifying drivers of system irregularities and preventing the system from overload and shorts.”

The connector also makes cars significantly safer when being serviced by being able to switch off the power to the affected components.

“A built-in micro-electro-mechanical systems (MEMS) force sensor recognizes human handling of the connector and interrupts the power,” explained Dr. Ng. “By turning off the power before disconnection, arcing is eliminated plus the potential hazard of damaging the connector and to those servicing the vehicle.”

This benefit also applies in crash situations making the vehicles safer for emergency personnel responding to an accident. This is particularly critical in severe crash situations because it eliminates high-voltage concerns among the many mechanical and technical considerations emergency response crews face when rescuing accident victims.

While commercialization discussions are underway with several automotive companies, Dr. Ng and his team are continuing their work to improve the prototype connectors with better form factor and functionalities. ■

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SAVE THE DATE

COLLABORATION IN MOTION

LONDON CONVENTION CENTRE
LONDON, ONTARIO
JUNE 2 - 4, 2008

For the first time ever, this year's conference will bring together the Network's annual Scientific and HQP conferences in celebration of AUTO21's successful renewal application. The merging of the two conferences is expected to attract more than 400 researchers and students involved in automotive-related research as well as industry representatives, government and NGO participants.

This three-day event will include a Gala Banquet to celebrate the Network's achievements, sessions that showcase AUTO21 success stories, panels that explore industry and global automotive perspectives as well as several high-profile keynote speakers. In addition, the conference will also feature AUTO21 student posters as part of the annual HQP Poster Competition.

This will be the largest and most exciting AUTO21 event to date. Mark your calendar today and visit www.auto21.ca for conference updates throughout the spring. Looking forward to seeing you in London!



AUTO21 Scientific Director and CEO Honoured with Research and Development Award

The Ontario Society of Professional Engineers (OSPE) and Professional Engineers Ontario (PEO) honoured AUTO21 Scientific Director and CEO, Dr. Peter Frise with the Engineering Medal for Research and Development at the 2007 Ontario Professional Engineers Awards.

Since 1947, the Awards have recognized engineers that apply their engineering skills to improve the quality of life of Canadians. Dr. Frise received the 2007 Engineering Award for bridging the gap between Canada's automotive industry and its post-secondary education system through collaborative research projects.

"Through AUTO21, we're moving academic research off the shelf," said Dr. Frise. "Our external partners use the knowledge gained through our projects to create jobs, refine processes and improve health and safety. These developments impact both our largest economic sector and all Canadians."

Dr. Frise was presented with the medal at the 60th Annual Ontario Professional Engineers Awards in Toronto on November 10, 2007. ■



**From the
*Scientific Director***

Dr. Peter Frise

In 2007, the Administrative Centre took on the challenge of preparing, submitting and defending AUTO21's Renewal Proposal. It is my great privilege to tell you that the AUTO21 Network of Centres of Excellence has been funded for a second seven-year funding cycle.

The renewal process provided an opportunity to examine how to build on past experiences and successes, while focusing on the challenge of evolving the Network toward sustainability.

A key component of the process was to ask: how can AUTO21 better meet the needs of its 130 external partners, the 266 members of its research community and over 500 Network HQP? It was determined that while each group had specific needs, by addressing these needs the entire AUTO21 community would benefit.

Industry indicated that their needs and timelines require a degree of flexibility that is difficult for traditional research programs to offer with calls for proposals every two years. To ensure its partners have access to the Network's talent and capabilities, AUTO21 has implemented exploratory grants to evaluate the potential of a new project and collaboration. In future, the Network's traditional project identification and solicitation process will continue but there will be additional, smaller calls integrated into the research program as well.

New program highlights include: an international travel assistance program; an HQP internship program; a distinguished lectureship program; and other outreach initiatives. We are developing the structure for these new initiatives and programs and look forward to sharing more details in future.

AUTO21 is committed to developing a sustainable automotive research community and framework. The Administrative Centre is working hard to ensure that it honours the Network's past accomplishments and processes while creating new programs to move forward and keep pace with an evolving international automotive sector.

We are extremely excited about what another seven-year mandate will allow the Network to accomplish, and we look

forward to informing you of the new research program in the coming months.

On October 10th, 2007, we welcomed Dr. John Mann as the new chair of the board of directors at the AUTO21 Annual General Meeting. John's expertise as the former Director of Engineering and Regulatory Affairs for Chrysler Canada and his knowledge and commitment to Canada's automotive sector will help AUTO21 to achieve continued success.

I look forward to speaking with you in 2008. Happy New Year! ■

Peter Frise,
Scientific Director and CEO

AUTO21 Collaborates with the APMA

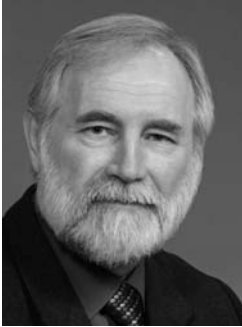
The Automotive Parts Manufacturers' Association (APMA) Annual Conference & Exhibition is Canada's largest automotive event. In 2007, AUTO21's long-standing relationship with the APMA created a unique opportunity to demonstrate current research projects through the *Showcase of Innovation*.

This year, AUTO21 aims to build on last year's successes with a dynamic *Showcase of Innovation* that will once again feature AUTO21 research projects and profile automotive-research experts available to work with the Canadian auto parts sector.

Visit AUTO21's *Showcase of Innovation* at the APMA Annual Conference & Exhibit, April 30 - May 1, 2008 at the Hamilton Convention Centre in Hamilton, Ontario.

AUTO21 Announces Changes to Its Board of Directors

Chair of the Board:



Dr. John L. Mann recently retired as Director of Engineering & Regulatory Affairs for Chrysler Canada Inc. where he was responsible for

all technical matters in Canada. He has over 30 years of engineering experience and is one of the founders and past chair of the board of the University of Windsor / Chrysler Canada Automotive Research and Development Centre. Dr. Mann is also a director of the Ontario BioAuto Council, a member of the Ontario Research and Innovation Council, and serves on several other boards where he maintains an active involvement in the future of Canada's automotive industry.

"I begin my term as chair of the board at the same time as AUTO21 begins the next phase of its life cycle after successfully being renewed as one of Canada's most important NCEs. During my term, the board and the management team of AUTO21 will focus on building upon the successes in the first funding cycle, capturing the opportunities that are before us, and planting viable seeds for the future. Although it seems like a long way off, we also have to begin the process of preparing for conclusion of the second funding cycle by forging even stronger relationships with industry and other stakeholders, and by building a higher level of awareness of the value that the AUTO21 research community provides to the Canadians that we serve."

Following its Annual General Meeting in October 2007, AUTO21 welcomed John Mann as the new chair of the board and three new members. In addition to the new members, Bob Séguin, assistant deputy minister of Ontario Economic Development and Trade has been re-elected for a three-year term and John McDougall, president and CEO of the Alberta Research Council, was re-elected to the board for a one-year term.

New Members:



Raymond Finnie

Raymond Finnie is the president of Kromet International Inc. and has over 20 years experience in automotive

and industrial manufacturing. Mr. Finnie has been a director of many Canadian automotive organizations including the APMA and CAPC. He currently acts as an advisor to private equity firms and sits on the boards of two private Canadian automotive suppliers.

"I am excited about joining the board of directors of AUTO21. The auto industry is extremely competitive and I believe that the key to guaranteeing Canada's competitiveness is through innovation and new technologies leading to new product development in the marketplace. AUTO21 is one of the leading models that allow researchers, auto suppliers and makers and the Canadian government to effectively work together to improve Canada's competitiveness in the worldwide automotive market."



Robert Little

Robert Little is the president of Altair Engineering Canada, Ltd. He joined Altair Engineering in 1988 after

working for an automotive OEM. In 2005, he was asked to form the company's 14th global subsidiary in Canada. He remains an executive with the parent company where he assists in the development of business strategies that increase the innovation level of clients worldwide.

"The primary reason for my joining the AUTO21 board was the opportunity to work with an exceptional group of people in the context of a very challenging industry. As an active board member, I hope to help increase the level of successful collaboration between AUTO21 researchers and industry participants."



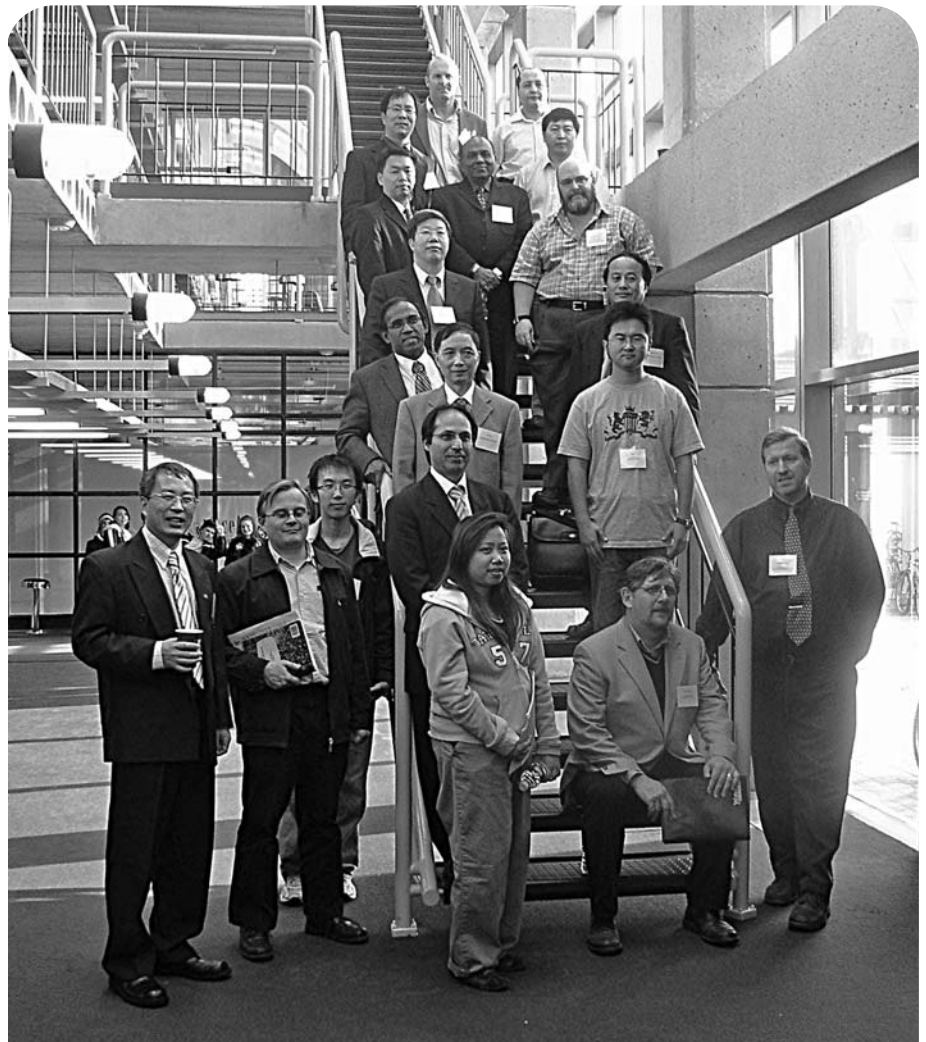
Brian Surgenor

Brian Surgenor is professor and head (acting) of mechanical and materials engineering at Queen's University. AUTO21

researchers elected Dr. Surgenor as their representative to the board. This is his second appointment to the board of directors. He also leads the AUTO21 project, *Neuro-Fuzzy Systems for Inspection in Manufacturing Processes*.

"I'm extremely pleased to once again be able to represent the researchers on the board. The Network is a tremendous success story whose lessons could be extended to other organizations that are trying to promote interdisciplinary and intra-university research. I consider my role on the board to once again help maintain the balance between industry expectations and academic needs."

Fuel Cell Workshop



AUTO21 appreciates the contribution and dedication of its retiring Board members:

- Duncan Card,** partner, Bennett Jones LLP
- Ann Herten,** director of Human Resources, Regional Aircraft Division, Bombardier Aerospace
- Robert Hindle,** national director of facilities, Earth Tech (Canada) Inc.
- Wai Tung Ng,** AUTO21 project leader and former researcher representative

As part of Waterloo University's Energy Week, the first NRC-AUTO21-Waterloo Fuel Cell Workshop was held on October 25, 2007. The event was organized by Dr. Xianguo Li, who leads AUTO21's research project *PEM Fuel Cells and Related Technologies*, and attended by over 60 people including representatives from the industry, academia and government at both provincial and federal levels.

The aim of this exercise was to bring industry, government and academic partners with a common interest in fuel cells under one roof to create new linkages for the advancement of fuel cell technology.

Researchers participating in this workshop made presentations showcasing all fuel cell activity done under the umbrella of AUTO21. With the provincial and federal government representatives sharing the funding opportunities with AUTO21 researchers, this was a great backdrop for initiating new partnerships among funding agencies, industries and academia.



AUTO21 & EDGE Collaborate on Seminar

By Robert Mann, Societal Issues Theme Coordinator



AUTO21/EDGE Seminar organizers with Minister Papatello (centre) and Deputy Minister Amin (right).

On November 21, the Honourable Sandra Papatello, Ontario's Minister of Economic Development and Trade, addressed a seminar organized by AUTO21 and the Emerging Dynamic Global Economies (EDGE) Network, two of Canada's NCEs, at the Executive Learning Centre at the Schulich School of Business at York University. The seminar, *China, India and the Canadian Auto Industry*, was organized to stimulate an exchange of ideas among industry stakeholders, academic and government representatives regarding the challenges and opportunities posed by the developing economies of China and India for the Canadian auto industry.

AUTO21 members on the organizing committee (Dimitry Anastakis, Trent University, Robert Mann and Gina Stoduto, Centre for Addiction and Mental Health and University of Toronto, Greig Mordue, Toyota Motor Manufacturing Canada and Maureen Molot, Carleton University) planned the event in collaboration with Bernard Wolf, Director of the International MBA Program at York

University and a Theme Coordinator with the EDGE Network, Debra Steger, EDGE Scientific Director and Peter Frise, AUTO21 Scientific Director and CEO.

The seminar was sponsored by the Ontario Ministry of Economic Development and Trade. Minister Papatello's remarks emphasized the Ontario Government's commitment to work with and assist Canadian industry in responding to developments in the economies of these countries. About 30 attendees including Fareed Amin, Deputy Minister of Economic Development and Trade for Ontario, participated in the event.

Participants heard about the remarkable transformations in the Indian and Chinese economies, including the rapid developments in their automotive industries, and about the opportunities and challenges these developments are creating for Canada and the Canadian auto industry.

The seminar was organized around three sessions: Bruce Belzowski, University of the Michigan

Transportation Research Institute and Loren Brandt, University of Toronto discussed *What is happening on the ground in India and China*; Tim Sturgeon, Massachusetts Institute of Technology, and Paul Haelterman, CSM Worldwide discussed *To what extent will we see more and more vehicles and parts from China and India*, and over what period of time; and Dennis DesRosiers, DesRosiers Automotive Consultants, Murray Jans, M.A. Jans and Associates, and Bill Murnighan, Canadian Auto Workers discussed *What are the implications for the Canadian auto industry*.

Seminar participants unanimously concluded that more attention to these issues is needed in Canada. As a result, several attendees, including participants from AUTO21 and EDGE, agreed to work together to identify future opportunities for action. ■

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