

# KITCHENER-WATERLOO SECTION

**October 2002**

## **Coming events**

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### GARY KENWARD OF NORTEL NETWORKS 18 OCTOBER

Presented by the Communications, Information Theory and Vehicular Technology Chapter.

Date: Friday 18 October 2002 Time: 2.30 pm  
Place: Math and Computer Building MC5158  
University of Waterloo, 200 University Avenue West.  
Speaker: Gary Kenward, Wireless Networks Lab., NORTEL Networks, Ontario.

### IEEE KW SECTION SEMINARS 2002 Oct 4 – Nov 25

Published by Eliza Ho

All seminars are delivered at the University of Waterloo. All will be in Davis Centre room DC1304 except as follows: Oct 4 and 11 in RCH 307, and Oct 23 in DC1302. All start at 3.30 pm.

Date	Speaker	Institution	Topic
2002			
Oct 4	Dr. Ruud E.I.Schropp	Utrecht University	Large Area Electronics and Photovoltaics using hot wire CVD
Oct 11	For information please see <a href="http://ece.uwaterloo.ca/~a-sidic">http://ece.uwaterloo.ca/~a-sidic</a>		
Oct 18	Dr Gehan Amaratunga	Cambridge University	Carbon Nanotubes for Electronics
Oct 23	Dr Michael Hack	Universal Display Corp New Jersey	High Efficiency OLED Technology
Oct 28	Dr William Milne	Cambridge University	Growth and Field Emission Applications of Aligned Multiwall Carbon Nanotubes
Nov 4	Dr. Sigurd Wagner	Princeton University	Amorphous Silicon Transistors Under Mechanical Strain
Nov 11	Dr John Rowlands	University of Toronto	Medical X-ray Imaging: Past, Present and Future
Nov 18	Dr Francesco Lemmi	FlexICs, California	Large-area Imaging Systems On Glass and Plastic Substrates
Nov 25	Dr Safa Kasap	University of Saskatchewan	Noise in Electronic Devices

## **DISCOUNT FOR DISTANCE LEARNING**

The IEEE Educational Activities Board (EAB) has announced that IEEE members can get a 10% discount on the cost of some correspondence courses given by half a dozen US colleges, including University of Washington and MIT Advanced Study Program, and by some other organizations: See <http://www.ieee.org/EduPartners>

## **IEE (UK) WILL TRANSMIT FARADAY LECTURE NEXT FEBRUARY 4**

The Institution of Electrical Engineers will broadcast by satellite a lecture on “Fighting Crime with Science: Footprints, Fingerprints and Forensics” on 4th February 2003 at 1 pm EST. The Faraday lectures are designed for schools: the IEEE Educational Activities Board recommends that you alert your local school.

For more information on how to receive this broadcast contact Celeste Torres: [c.torres@ieee.org](mailto:c.torres@ieee.org) or go to [www.ieee.org/eab/college/faraday](http://www.ieee.org/eab/college/faraday).

## **EL-HAWARY DESCRIBED FUTURE OF THE IEEE**

Mo El-Hawary is Director of Region 7 of the IEEE, which is known as IEEE Canada. It is linked with the Engineering Institute of Canada. He plans to visit all 26 sections in Canada. At a meeting of the Kitchener-Waterloo Section on the 26<sup>th</sup> of September, he discussed the function and state of the IEEE. “We do one thing well – we serve humanity” he said. The IEEE logo, consisting of symbols for an electric and magnetic field inside Ben Franklin’s kite, had been reviewed at considerable expense, but retained.

The Institute has sizeable investment in stocks, and has suffered in the recent downturn: it had had to cut back on some activities and to call on its reserves and those of some of its Societies. (It had been suggested that Spectrum should be printed in Asia.) Generally, reserves of 9 to 12 months expenses are considered to be sufficient. A section of the size of KW should have \$3K reserves, but ours are actually about \$21K: Mo advises us to spend our surplus on enhancing our image in society.

In a lively discussion, it was mentioned that student member fees do not cover costs. Students tend to drop out on graduating, but rejoin after 3-6 years, and to become active in the section after 10 years. The value of Canadian conferences was questioned - perhaps quality needs to be improved. The IEEE Standards activity is undoubtedly very important – the Working Groups consist of representatives of industrial suppliers, industrial users, education and the military, so that IEEE appears to be neutral.

## NEWS FROM ACADEMIA

The **Perimeter Institute of Physics** of Waterloo, which is already up and running in the old Post Office building, got a symbolic start in June when Prime Minister Jean Chretien “turned the first sod” and announced a federal grant of \$25M to be added to the \$100M already donated by Mike Lazaridis of RIM, \$11.5M from the Ontario Government and \$10M each from two other RIM employees. The site is next to Silver Lake in downtown Waterloo, next to the railway station and the Canadian Clay and Glass Gallery, though the Institute is already up and running in the old Post Office building. Waterloo Maple of Waterloo has donated a perpetual licence for its Maple mathematical software, including technical support and training.

At the **University of Waterloo**, the new Centre for Environmental and Information Technology, now under construction west of the main entrance, is scheduled to open next September. It will contain a Multimedia Communications Research Lab, thanks to donations of cash and equipment from Leitch Technology Corporation of Toronto, and federal and provincial government funding.

Prof. Savafi-Naeini led a team that developed a vehicle mounted antenna to provide high-speed access to the internet. The antenna can be stowed on the roof of a vehicle while traveling, then deployed to pick up signals from a satellite. The entire system is a product of C-Com Systems of Ottawa and should be available by December.

Prof. Peter Bernath has a \$30M contract from the Canadian Space Agency to analyze data about the ozone layer from a Canadian satellite to be launched early next year.

Microsoft Canada has offered \$2.3M to the University, to be used for research, education solutions and curriculum integration. The fact that curriculum integration includes the mandatory use of a new Microsoft language, C sharp (C#), had cast doubt on whether the offer will be accepted in its entirety. (See Editorial page 2) David Johnston, president of UW, has apologized to the Senate for announcing the deal before details had received necessary approvals.

The UW Research Park was routinely subjected to an archeological search before construction began, and two native campsites were found, containing small stone tools.

## NEWS FROM INDUSTRY

The Dominion Institute and the Globe and Mail have named Mike Lazaridis of RIM as the Nation Builder of the Year. Deloitte and Touche has included RIM and Open Text in its list of the 50 fastest-growing Canadian companies in the last five years. Profit magazine has listed RIM, Open Text and Fred Systems among the 100 fastest growing companies in Canada: the magazine also listed Dspfactory as the second fastest growing start-up company. Research Infosource has listed Com Dev, Descartes, Open Text and

RIM as the country's biggest spenders on R and D. In spite of all that, Ron Neumann told Communitel that venture capitalists invested only \$6M in companies in the Waterloo area in the first quarter of 2002, compared to \$23M in Toronto, \$132M in Montreal and \$352M in the Ottawa area.

**Arise Technologies** of Kitchener, together with the University of Toronto, has received a grant of \$250K from the Ontario Government for development of solar panels as a source of energy. The panels will be applied to several homes being built in this area. The company has made a share offering. It is amalgamating with Intercedent Ventures Limited of Toronto.

**ATS** of Cambridge is also involved in solar technology, and has set up a subsidiary, Spherical Solar Power Inc. to manufacture a flexible type of solar cell.

**Biomedical Photometrix**, which operates as Philips Analytical, has moved into larger quarters on Parkside Drive in Waterloo. The company makes equipment for analyzing genetic microarrays, and scanning optical microscopes.

**Com Dev International** of Cambridge has sold off its high-speed wireless division (M/ERGY) to Axio Wireless, formed by managers from the division.

**Cyberplex**, which had occupied a new building on Albert Street in Waterloo, then downsized and moved to Frederick and Weber in Kitchener, has now moved out of the area and is concentrated in Toronto.

**Dalsa Corp** of Waterloo has received \$1.7M from Industry Canada to complete the design of a digital movie camera which it is hoped will revolutionise the movie industry. The company has received a contract from Motorola Corp to manufacture micro electromechanical systems (MEMS) sensors: they will be manufactured at Dalsa's silicon foundry in Bromont, Que. The company has also received an order worth \$2M to supply image sensors to Kyocera of Japan.

**Dspfactory** of Waterloo has moved into a new building by Waterloo Tech Campus on Kumpf Drive in the North end of the city. They manufacture chips for hearing aids.

**iAnywhere** of Waterloo will be the first tenant of the UW Research and Technology Park, north of the University of Waterloo. iAnywhere is a successor to WatCom, and makes software by which mobile wireless devices can access their office computer. It is the most profitable subsidiary of Sybase of California.

**Open Text Corp.** of Waterloo had revenue of \$152M in the year ending June. Its products include software for sending business data safely over the Internet, and it is developing software for sharing audio and video files. The company expects to take over

Centrinity of Richmond Hill, which would increase the client base from about 6 million to 14 million.

**RIM (Research In Motion Ltd.)** has announced that its Blackberry supports the US S/MIME security system for sending e-mail, so that the National Security Agency has cleared it for use by US government agencies: S/MIME (Secure Multipurpose Internet Mail Extension) verifies where an e-mail came from, and that it has not been tampered with. RIM has broken into the French market, with an arrangement to make its Blackberry compatible with SFR, a wireless carrier. And in Australia, the Blackberry will be sold in conjunction with Telstra Mobile. In the USA, another version will operate with Nextel radio systems. The National Basketball Association has bought Blackberrys for its 500 staff and referees (but not the teams). RIM has filed four actions against Good Technology Inc. of California for infringing copyright, trademark and patents relating to the Blackberry, and one action against Handspring Inc. Losses have been predicted for RIM, but it plans to introduce new products, including a version of the Blackberry which has a built-in earphone and microphone like a cellphone.

**Sandvine Inc.** of Waterloo has reached an agreement to include the filtering technology of Surf Control of the UK into its Internet products. Sandvine was founded by former employees of PixStream.

**VideoLocus** of Waterloo has developed a new encoder to the H.264 standard, which compresses video several times more than MPEG-2, the current standard. They expect to start shipping the product this fall. Guy Cote, one of the founders, described setting up a high tech company at our AGM on November 28.

**Virtek Vision** of Waterloo has received a grant worth \$1.2M from the Ontario Ministry of Agriculture and Food to complete development of a biosensor for detecting specific impurities in water. The initial device came with FONIA Technologies, a Toronto company that Virtek has acquired. Virtek has sold its BioTech division, which makes devices to read DNA samples, to Bio-Rad of California, which will keep it operating next door to Virtek.

**WorldWithoutWire** of Waterloo has installed a network of radio antennas on towers and buildings in southern Ontario which provide high-speed internet access to small businesses. The system uses unlicensed (ISM) channels. There are enough antennas to keep the line of sight distance to each customer down to 5 km.

## ALTERNATIVE ENERGY

The Ontario Hydro coal-fired generating plant at Nanticoke produces 6% of all the air pollution in Canada, according to one report. Many groups are looking for alternative

ways of producing energy. Two units at the Bruce Nuclear Generation Station are to be put back into service by next summer, replacing 1500 MW of fossil power by nuclear. (Partly because of the air conditioning demand, and partly because one of the Bruce reactors had to be shut down, the Ontario system was running flat out this summer.) The Canadian Nuclear Commission could shut down the entire Bruce Nuclear operation if the owner, British Energy PLC does not have enough financial backing to cover eventual decommissioning, but it appears that this potential problem has been solved.

Several methods are being used increasingly, including wind, microhydro generators and solar panels on houses, but it will be many years before they take over an appreciable fraction of the province's load. One problem with wind farms is the high installed cost per watt generated, calculated to be several times that of the CANDU nuclear reactor. Meanwhile, in Japan, Osaka Power has placed a contract with Ballard Power Systems Inc. of BC to develop 1 KW co-generation fuel-cell systems for Japanese houses.

As for cars, a prolific source of pollution, the Daimler-Chrysler demonstration fuel-cell car, NECAR5, finished a trip across the US in June. The car used methanol and converted it to hydrogen for the fuel-cell. The Governor of New York State has proposed a tax credit of \$2000 to offset the premium price of hybrid cars, which use gasoline and electric propulsion, and achieve much better mileage than conventional cars (typically 3 litres per 100 km.). However, Vauxhall of the UK now claims that its prototype Eco-Speedster diesel car uses only 2.5 litres per 100 km

A Maglev (magnetically levitated) train is being installed to run between Shanghai International Airport and the city.

### **DOES YOUR WORKSTATION MAKE YOU SICK?**

According to an article by Linda Dailey Paulsen in IEEE Computer Magazine, there are far more germs on desks than on toilet seats in offices tested in the US. Readings of germs per square inch were: telephone 25000, desktop 21000, keyboard 3000, mouse 2000, toilet seat less than 1000. And where do you eat your sandwiches?

### **QUICK PUZZLE 3**

The original problem was: name three successive members of an arithmetical progression whose product is a prime number.

Think outside the box: a prime number has to be an integer, but members of an arithmetical progression can be fractions, or even irrational.

We received two solutions:

From Neil Eaton:  $c, 2*c, 3*c$  where  $c$  is the cube root of 0.5

From P. Fieguth: 1, 1.5, 2.0

Both answers give a product of 3.

In a draw at an executive meeting, Fieguth's name was drawn.

Your editor (who would not be eligible for the draw) came up with  $1/3, 9, 17 \frac{2}{3}$ , whose product is 53. You can make any number of answers thus  $1/n, n^2, 2n^2-1/n$  provided  $2n^3-1$  is prime.

### **THE GOOD NEWS**

A man was busy at work when his wife phoned: she said she had some good news and some bad news. He asked her only to give him the good news, as he was extremely busy. Her reply was "The airbag worked!"

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