

IEEE NEWSLETTER KITCHENER-WATERLOO SECTION

May 2001

Meeting

Please mark this date on your calendar

9 May Dr. Bamji on Luminescence in Polymeric Insulation
prior to Electrical Breakdown
University of Waterloo Davis Centre Room DC1302 page 3

Feature articles

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Stream A:)
Summer 2001)Siva
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Winter 2001)

EDITORIAL

We would like to improve this newsletter,
and will be sending you a questionnaire.....
[in the form of a web page]

The Kitchener-Waterloo Section of
the Institute of Electrical and
Electronics Engineers serves all
members whose mailing address is
in Bruce, Grey,Perth, Waterloo or
Wellington counties.

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DR. BAMJI ON DIELECTRIC LUMINESCENCE - 9 MAY 2001

Presented by the Kitchener-Waterloo Section

Date: Wednesday 9 May 2001 Time: 3.00 pm

Place: University of Waterloo Davis Centre Room DC 1302

Speaker: Dr. Soli S. Bamji, Fellow, IEEE; National Research Council of Canada.

Subject: Luminescence in Polymeric Insulation prior to Electric Breakdown

Refreshments will be served.

Subject: Dielectric materials constitute the backbone of all power devices and can directly influence the effective life of equipment in service. Polymers are extensively used as insulation material in power devices such as transformers, capacitors and underground high voltage transmission and distribution class cables. Electroluminescence (EL), the emission of light in dielectrics subjected to high electric stress, has been observed in many insulating materials such as polyethylene, polypropylene and epoxy resin, during the early stages of insulation degradation. Light emission, space charge injection and trapping that can occur at points of electric stress enhancement in a dielectric have been suspected to be critically involved in the degradation of the polymeric insulation.

This presentation will describe the spatial and spectral resolution of electric charge injection and EL emission at points of electric stress enhancement in crosslinked polyethylene of underground power cables. It will be shown that EL emission occurs during the very early stages of insulation degradation, much before partial discharge inception. EL emission caused by electric charge injection is very localized and the space charge in the polymer plays a dominant role during the aging of the polymeric insulation. The penetration depth of the charges injected in the polymer and space charge formation can be linked to insulation degradation that could lead to catastrophic failure. Differences in luminescence from the surface and volume of the insulation will be described and recent advances to prolong the life of polymeric insulation in power devices will be discussed.

Speaker: Dr Bamji is at the National Research Council of Canada, Ottawa.
He is a Fellow of the IEEE.

IEEE EDUCATIONAL ACTIVITIES BOARD INVITES NOMINATIONS

The IEEE EAB has an annual award for people who have contributed to education over the past year. Nominations are due 30th April. See <http://www.ieee.org/organizations/eab/arc/awards/index.htm>.

STUDENT PAPERS NIGHT 16 MARCH 2001

There was a good crowd in attendance in UW Davis Centre for our annual Student Papers competition.

Four teams from Conestoga College took part: it was decided to divide them into two categories - Computer systems and Communication systems. Two teams from the University of Waterloo also entered.

In the Computer Systems presentations from Conestoga College:

First prize went to Jeff Corrall and Nemanja Jevremovic for AD.I.M (Digital Image Module)@, a concept in which the film canister in a conventional camera would be replaced by a digital sensor and associated circuitry. The device was assembled, but it would take a lot of miniaturisation to bring it to target size.

Second prize was awarded to Marc Guran and Colin Yardley for AReal-Time Video Editing System@ . This allows the operator to alter the colour and location of each pixel in a television image.

The Conestoga College Telecommunication System papers received these awards:

First prize to Greg Ferguson, Dan Jeffares and Craig Nowak for AProcess Monitoring vis Web Browser or Wireless PDA@. The machines to be monitored contain sensors whose outputs go through the AC mains to a central computer. Data from the sensors can be called up, or alarm signals sent in at any time.

Second prize went to Jose Morel and Cory Watson for AFour Pole 4.28 Ghz Dielectric Band Pass Filter@. By using dielectric resonators (supplied by ComDev), which are much smaller than conventional metal cavities, the filter is made smaller and lighter, an important consideration in space borne equipment. Test results were presented.

The awards to the University of Waterloo presentations were:

First prize to Ryan Burns for ADigital Signal concepts in the MPEG-1 Layer 3 Compression Scheme@. This scheme, popularly known as MP3, was outlined and a design for a player was described.

Second prize went to Connie Kwan for APower Supply Assessment within the CompactPCI Specification@. Compact Peripheral Component Interconnect is a concept for interconnecting PCBs. Redundant power supply modules are included, and they must be hot swap capable, and able to supply demand or indicate overloading.

The judges were Jake Huschilt, Raafat Mansour, John Mowbray and Patrick Rault. Besides the prizes mentioned, a grand prize for the best overall paper was awarded to both the winning paper in the Conestoga Computer Systems division and the winning paper in the Conestoga Telecommunication section, which were judged to be of equal merit.

The prizes were: 1st \$150, 2nd \$100, and the grand prizes \$150, all funded by the Kitchener-Waterloo Section.

NEWS FROM ACADEMIA

Conestoga College is applying to the Province of Ontario to have its charter changed to a Polytechnical Institute. This would give the college the power to issue degrees. It is also expanding its student residence. The college came first in overall performance ratings of the ten colleges in Ontario.

The University of Waterloo, together with the universities of Western Ontario and Toronto and McMaster are partners in the Advanced Design and Manufacturing Institute (ADMI). The Institute is launching a Master's Degree Program in Design and Manufacturing.

NEWS FROM INDUSTRY

CheckFree i-solutions of Waterloo (a subsidiary of CheckFree of Atlanta) does all the software development for the parent company. There are at least 165 employees in a building on Phillip Street. CheckFree provides Internetbased billing and payment services.

Com Dev International of Cambridge has received a contractworth \$2.8M for switches for a European satellite company. The company has also received four R and D contracts from the Canadian Space Agency to develop components for satellites, and is also issuing shares to finance other R and D activities. Com Dev Wireless division has developed a wireless equipment called M/ERGY to connect desktop and laptop computers to internet providers at high speed: it is scheduled for trials soon, and for production next year.

Hammond Power Solutions of Guelph (formerly part of Hammond Manufacturing) has received a contract worth \$3M to supply 74 transformers for turbine generators in the USA.

Navtech of Waterloo has acquired Airware Solutions of Montreal. Airware's software matches airline pilots preferences to their schedules. Navtech software performs route analysis and flight planning.

Northern Digital of Waterloo has purchased the optical localiser business of Rohwedder Isotech GmbH of Germany, and has set up a European office in Markdorf.

Research in Motion (RIM) of Waterloo is mentioned by Fortune magazine as a world leader in wireless e-mail with the Blackberry device. The company has received a contract from BT Cellnet of Britain for 175,000 e-mail pagers: the devices will be compatible with GRPS, an extension of the European GSM cellphone system.

Switchview Inc. of Waterloo has combined with Aquilium Software Corp of Mississauga and NetPerforma Corp of Toronto to form MDR Switchview Global Networks Inc. of Oakville: the new company has acquired MDR Technologies of Oakville.

CONFERENCES IN CANADA

2001

- May 2-4 2001 IEEE-IAS Advanced Process Control Applications for Industry Workshop. Richmond BC. JC Fong. 604 528 2829. jackson.fong@bchydro.bc.ca
- May 12-13 2001 IEEE 9th Workshop on Program Comprehension – WPC 2001. Toronto. R Holt 519 888 4567x4671. holt@plg.uwaterloo.ca
- May 12-19 2001 IEEE 23rd International Conference on Software Engineering. Toronto. H.A Muller. 250 721 7630. hausi@csr.uvic.ca
<http://www.csr.uvic.ca/icse2001/>
- May 13-16 2001 Canadian Conference on Electrical and Computer Engineering. Toronto. C Lowell: 905 628 9554. c.lowell@ieee.org
<http://www.ieee.ca/~ccece01/>
- Jun 11-13 2001 IEEE 14th Computer Security Foundations Workshop. Keltic Lodge, Nova Scotia. I. Cervasato: 202 404 4909. iliano@itd.nrl.navy.mil
<http://www2.csl.sri.cam/csfw/csfw14/cfp.html>
- Jun 17-21 2001 IEEE Power Electronics Specialist Conference PESC2001
<http://conferences.ubc/pesc2001>

- Jun 25-28 2001 BMX IX IEEE Bandwidth Management Workshop
Montebello. Quebec. J. Hopkins: 613 763 4591.
hopkins@nortelnetworks.com
<http://www.quantumlynx.com/IEEEBMXIX>
- Jul 7-8 2001 IEEE Workshop on Scalespace and Morphology. Vancouver. M
Kerckhove 804 289 8774 mkerckhov@richmond.edu
- Jul 7-13 2001 IEEE 8th International Conference on Computer Vision (ICCV).
Vancouver. D Lowe 604 822 3170 lowe@cs.ubc.ca
- Jul 8 2001 IEEE Workshop on Multi-Object Tracking. Vancouver. J. Krumm:
425 703 8283. jckrumm@microsoft.com
<http://www.research.microsoft.com/workshops/MultiObjectTrack>
- Jul 8 2001 Workshop on Perceptual Organization in Computer Vision.
Vancouver. M Lindenbaum +972 4 8294331 mic@cs.technion.ac.il
<http://www.cs.technion.ac.il/~mic/POCV2001/pocv2001.html>
- Jul 12-15 2001 6th International conference on Computer Supported Cooperative
Work in Design (CSCWD). UWO London.ON. W Shen 519 430 7134
<http://www.cscwid.org/cscwd2001/>
- Jul 13 2001 Workshop on Variational and Level Set Methods in Computer
Vision (VLSM) Vancouver. N Paragios 609 734 3639
nikos@scr.siemens.com <http://www.scr.siemens.com/vlsm01/>
- Jul 13 2001 Workshop on Video Registration. Vancouver. P Burt 609 734 2451
pburt@samoff.com
<http://www.cs.ucf.edu/%7evision/workshop/workshop.html>
- Jul 15-19 2001 IEEE Power Engineering Society Summer Meeting. Vancouver. Y.
Mansour: 604 473 2730 yakout.mansour@bchydro.bc.ca
<http://www.ieee-spm2001.org>
- Jul 16-20 2001 IEEE Nuclear & Space Radiation Effects Conference. Vancouver.
M. Shaneyfelt: 505 844 6137. shaneymr@sandia.gov
<http://www.nsrec.com/npsnews.htm>
- Jul 25-27 2001 IEEE Workshop on the History of Telecommunications. St Johns
Newfoundland. M Geselowitz mgeselowitz@ieee.org
http://www.ieee.org/organizations/history_centre/cht2001.html

- Jul 25-28 2001 Joint 9th IFSA World Congress & 20th NAFIPS International Conference (IFSA/NAFIPS 2001) Vancouver. MH Smith 403 225 1024
mhs@mining.ubc.ca
<http://www.morden.csee.usf.edu/ifsonofips2001.html/>
- Jul 31-Aug 3 2001 International Symposium on Computational Intelligence in Robotics and Automation (CIRA 2001) Banff AB. M Meng 780492 5917
max.meng@ualberta.ca <http://www.cira2001.org>
- Aug 7-10 2001 4th International Conference on Information Fusion– (FUSION 2001) Montreal. E Shahbazian 514 340 8343 elisa_shahbazian@lmco.com
<http://omega.crm.umontreal.ca/fusion/>
- Aug 13-17 2001 IEEE International Symposium on Electromagnetic Compatibility- EMC 2001. Montreal. (EMC 2001 secretariat): 514 287 1070.
Emc2001@jpd.com <http://www.2001emcmtl.org/home.html>
- Aug 26-28 2001 Pacific Rim Conference on Communications, Computers and Signal Processing. Victoria. TA Gulliver 250 721 6028 agullive@ece.uvic.ca
- Aug 27-31 2001 IEEE International Conference on Requirements Engineering (RE 2001). Toronto. S Easterbrook. 416 978 3610 sme@cs.toronto.edu
<http://www.re01.org/>
- Sep 10-12 2001 IEEE Holm Conference on Electrical Contacts- CPMT. Montreal. J Lopez: 732 981 3437. j.m.lopez@ieee.org
<http://www.ewh.ieee.org/soc/cpmt/tc1/2001call.html>
- Sep 24-26 2001 IEEE Petroleum and Chemical Industry Technical Conference (PCIC 2001). Toronto. F.A. DeWinter: 519 740 4736.
Fadewinter@ra.rockwell.com <http://www.ieee-pcic.org/Toronto/pcic2001.htm>
- Oct 1-3 2001 14th International Symposium on System Synthesis. Montreal. R Hermida +34 91 394 7064. rhermida@dacya.ucm.es <http://www.iss-symposium.com/>
- Oct 1-5 2001 4th IEEE International Conference on the Unified Modeling Language (UML) Toronto. JFB Carter. 416 978 7569. jbc@cs.toronto.edu

Oct 14-17 2001 IEEE Conference on Electrical Insulation and Dielectric Phenomena (CEIDP 2001). Kitchener ON. S Jayaram 519 888 4567
jayaram@ecemail.uwaterloo.ca<http://eeel.nist.gov/ceidp/>

Oct 15-17 2001 IEEE Information Survivability Workshop. Vancouver. J McHugh.
412 268 7737. jmshugh@cert.org. <http://www.cert.org/research/isw.html>

2002

May 26-30 2002 IEEE 29th International Conference on Plasma Sciences (ICOPS).
Banff, Alberta. R.Fedosejevs: 780 492 5330. rfed@ee.ualberta.ca

Jun 24-28 IGARSS 2002 - 2002 IEEE International Geoscience and Remote Sensing
Symposium. Toronto. (IGARSS business office): 281 251 6067.
Grss@clearsail.net

Sep 28-Oct 3 INTELEC 2002 IEEE International Telecommunications Energy
Conference. Montreal. M.S. Davis: 450 458 5353. mdavis@odyssee.net

2004

May 1 ICASSP 2004 - 2004 IEEE International Conference on Acoustics, Speech
and Signal Processing. Montreal. D. O'Shaughnessy: 514 875 1266x2012. Dougo@inrs-telecomm.quebec.ca

DOMAIN NAMES REGISTERED IN CANADA

Internet names ending in .ca are now controlled by the Canadian Internet Registration Authority (CIRA). To register a name for yourself or your business, first look up the CIRA website, www.cira.ca. Check to see that the domain name you would like is not already taken. Pick out a certified domain name registrar, and tell him/her what you want, and how long you want it (up to ten years). For a fee, the registrar will send your request to CIRA.

COMPUTER ARTISTS WANTED

MTAC 2001 – Multimedia Technology and Applications Conference will be held
November 7-9 at the University of California at Irvine.
See <http://www.mtac.uci.edu>

This year they are anxious to increase the participation of visual artists.
500 word abstract due 30 April (flexible).
Full paper by August 1.

TWO NEW SELF-STUDY COURSES

1. “Multimedia Applications support for Wireless ATM Networks”: includes a Prentice Hall textbook by Anna Hac. Code HL5766 member price \$420 US.

2. “Practical Communication Antennas with Wireless Applications”: includes a Prentice Hall textbook by Leo Setian. Code HL5760 member price \$380 US.

Both include a study guide and final examination (in both paper and online formats). Contact customer-service@ieee.org or phone 1 800 678 4333.

CELLPHONE HAZARDS?

A study in Denmark has concluded that users of cellphones are not at risk for cancer. However, in Britain, parents are advised not to let their children under 16 use them extensively because of thin skulls and growing brains.

It is generally agreed that using a cellphone while driving is hazardous to the driver and to other road users: in some places it is illegal.

Less often mentioned is the possible hazard from the base station transmitter. A man who lives in Dornoch (on highway 6 between Durham and Owen Sound) was concerned about a tower to be erected about 200 metres from his house, because his daughter is believed to be susceptible to the growth of tumours. Rogers-ATT has agreed to find a site further away.

[In Toronto, there are base station antennas beside highway 401 (km 359) which are practically next to your car window. However, the transmitter power is probably low.-Ed]

ENERGY, BIG OR SMALL

It is planned to bring two nuclear generators back into service at the Bruce Nuclear Power Development.

Alberta, home of large stocks of oil and gas, is also to be the site of four large new wind farms.

Power Paper Ltd of Israel has developed a battery 0.5 mm thick which can be incorporated into packaging to power novel features. It has been licensed to International Paper Co. of New York.

HOW HIGH IS A BUILDING?

See March 2001 issue. If the student stood at the bottom of the building for 50.1 hours and at the top of the building for 50.1 hours, watching the barometer swing like a pendulum, and measured the time taken for it to do the same number of swings at both locations to an accuracy of 0.2 seconds, he could calculate the height of the building to an accuracy of 10 metres.

(The average radius of the earth is 6375 km, g is proportional to the square of the distance from the centre of the earth, the period of a pendulum is inversely proportional to the square root of g and standard errors add root sum of squares).

FAMOUS LAST WORDS

From IEEE Aerospace and Systems Magazine October 2000

I do not think that the wireless waves I have discovered will have any practical application –

Heinrich Rudolf Hertz (1857-1894)

Aerial flight is one of that class of problems with which men will never have to cope –

Simon Newcomb (1835-1909), American astronomer.

It is apparent to me that the possibilities of the aeroplane have been exhausted–

Thomas Alva Edison (1847-1931)

All this talk about space travel is utter bilge, really–

Richard Woolley, British Astronomer Royal, 1956