

The Nebraska Section

# IEEE Newsletter

September 2005



## UPCOMING MEETINGS

**October 20** - Joint IEEE Section and Power Engineering Society  
Topic: Nebraska's Largest Wind Turbine Farm  
Speaker: Mike Hasenkamp.

**October 26** - Joint IEEE Section & UNL Student Chapter  
Topic: Insurance Facts for Engineers  
Speaker: John Curry of State Farm Insurance

**November 17** - Joint IEEE Section Meeting and Computer Society  
Topic: Computer-Aided Drafting Technologies.  
Speaker: To be announced.

**December 8** - Joint IEEE and NSPE Meeting  
Topic: No topic at this time.  
Speaker: To be announced.

## NEBRASKA SECTION NOMINATIONS

Are you interested in serving the members of the Nebraska section? Do you have new ideas for services that the section can provide its members? During the month of September, the Nominations Committee, headed by Joel Haskins, will be looking for motivated candidates to serve in various positions. If you are interested, please contact Joel at (402) 636-3335 or send an email to [jhaskins@oppd.com](mailto:jhaskins@oppd.com).

## SYSTEM PROTECTION AND SUBSTATION CONFERENCE

The 29th Annual Iowa / Nebraska System Protection and Substation Conference will be held October 3rd through the 5th at the Crowne Plaza Hotel in Omaha. The conference consists of one day for system protection topics, one day for substation topics, and a one day substation security seminar. The cost is \$30 per day, with 7 PDH's available each day of the conference. A full conference program with registration form is available at <http://members.cox.net/iowanenebraska>.

Please visit the web site, or contact Matt Eibes, OPPD, at (402) 552-5854 or [meibes@oppd.com](mailto:meibes@oppd.com). Registration is requested by September 16th.

## 2005 SCHOLARSHIP AWARD WINNERS

The Nebraska Section and funding from the IEEE Support Club awarded three students scholarships for their academic achievements and participation in their IEEE student branch. The awards were Ruru Rai and Eric Kwete attending UNO and Andrew Parr attending UNL. Each individual received \$500.

If you are interested in encouraging future engineers, please send your money to the NE IEEE Treasurer, in care of David Heins, designating the funds to the NE IEEE Scholarship Award Fund.

If your company is interested in advertising in this newsletter and on our website, please contact Daniel DeLuna.

## Joint IEEE Section & Computer Society Meeting

### Design Automation Methods for Droplet-Based "Digital" Microfluidic Biochips

**Speaker:** IEEE Distinguished Visitor, Dr. Krishnendu Chakrabarty, Department of Electrical and Computer Engineering, Duke University

**Thursday, September 15, 2005**

**MISTY'S RESTAURANT**  
**6235 Havelock Avenue**  
**Lincoln, Nebraska**  
**402-466-8424**

**Meeting Sign in and Social hour:** 5:30 P.M.  
**Dinner:** 6:00 P.M.  
**Presentation:** 6:30 - 7:30 P.M.

**TOPIC OVERVIEW:** Composite micro-systems that incorporate micro-electromechanical and micro-fluidic systems are fast emerging as the next generation of system-on-chip (SOC) designs. The combination of microelectronics and microstructures is enabling a new class of integrated systems targeted at environmental sensing, actuation and control, biomedical analysis, toxic agent detection, and precision fluid dispensing. The 2003 International Technology Roadmap for Semiconductors (ITRS) identifies the integration of electro-chemical and electro-biological MEFS as one of the system-level design challenges that will be faced beyond 2009, when feature sizes shrink below 50nm.

This talk will first present an overview of the droplet-based digital micro-fluidics technology developed at Duke University. It will address the problem of designing droplet-based biochips. Current techniques for full-custom design of droplet-based "digital" biochips do not scale well for concurrent bioassays and for next-generation SOC designs that are expected to include fluidic components. A system design methodology that attempts to apply classical synthesis and module placement methods to the design of micro-fluidics-based biochips will then be presented. A clinical diagnostic procedure, namely multiplexed in-vitro diagnostics on human physiological fluids, will be used to evaluate the proposed method. Next, fault models and a concurrent test methodology for fault detection will be discussed. Finally, yield enhancement and fault tolerance

techniques based on dynamic reconfiguration will be presented.

**SPEAKER'S BIO:** Krishnendu

Chakrabarty is an Associate Professor of Electrical and Computer Engineering at Duke University, where he has been a faculty member since 1998. His current research is focused on design and test of system-on-chip integrated circuits, distributed sensor networks, real-time embedded systems, microfluidics-based biochips, and chip cooling using droplet-based microfluidics. He has co-authored two books, edited a third book, and published over 180 papers on these topics in archival journals and refereed conference proceedings. His research is sponsored by the National Science Foundation, Office of Naval Research, DARPA, and the Semiconductor Research Corporation.



**The presentation is worth 1.0 Professional Development Hour**

**MENU SELECTION:** Members and their guests can select one of the following entrees:

- Queen Cut Prime Rib (8 oz.) - \$25
- Chicken Breast with mushroom cream sauce - \$18
- Orange Roughy - \$18

Dinner Entrees include a dinner salad, Chef's potato or rice, seasonal vegetables, rolls and butter, coffee, tea or milk.

**IEEE student member meals are half price.**



**MEETING DIRECTIONS:** From I-80 West, take the North 56<sup>th</sup> Street/US-77 exit, exit #405. Turn left on North 56<sup>th</sup> Street. Turn right on US6 West (Cornhusker Highway). Turn left on Havelock Avenue to Misty's Restaurant and Lounge.

**RESERVATIONS:** Place your reservations no later than noon, Wednesday, September 14. Please give your name and the number of guests accompanying you to one of the individuals below when making reservations.

- COLUMBUS:** Connie Kramer (402) 563-5324  
cmkrame@nppd.com
- LINCOLN:** Nancy Hegener (402) 467-7646  
nhegener@les.com
- OMAHA:** Sharon Dickman (402) 552-5429  
sdickman@oppd.com

**ABOUT THE COMPUTER SOCIETY**

With nearly 100,000 members, the IEEE Computer Society is the world's leading organization of computer professionals. Founded in 1946, it is the largest of the 39 societies of the IEEE.

The IEEE Computer Society's vision is to be the leading provider of technical information, community services, and personalized services to the world's computing professionals.

The Society is dedicated to advancing the theory, practice, and application of computer and information processing technology. Through its conferences, applications-related and research-oriented journals, local and student chapters, distance learning campus, technical committees, and standards working groups, the Society promotes an active exchange of information, ideas, and technological innovation among its members.

If you have ideas for a meeting topic or are interested in presenting a topic at one of our meetings, please contact one of the Computer Society officers.

**IEEE POWER ENGINEERING SOCIETY**

By Al Kaspar- PES Chairman and  
Chuck Manternach - PES Vice Chairman

The IEEE Power Engineering Society (PES) is a worldwide, non-profit association of more than 20,000 individuals engaged in electric power engineering. PES members are involved in the planning, research, development, construction, installation, and operation of equipment and systems for the safe, reliable, and economic generation, transmission, distribution, measurement, and control of electric energy.

This year, the Nebraska Section of the PES sponsored a tour and presentation of a new substation in May, and will be sponsoring a presentation on a wind turbine project in October. We tend to have utility related presentations, because of the great support and participation we receive from the utilities in the state. However, we recognize that other facets of electric power engineering, such as consulting and manufacturing, have a great presence in our area. We encourage participation from those groups, and others, and we welcome suggestions for future presentation topics.

**OH, WHAT A TANGLED WEB WE WEAVE**

By Todd Stahlnecker

If you've been receiving the IEEE Online Institute emails for some time, you may recall how the URL web addresses had become exceedingly long. They would snake back and forth across your monitor like a sample DNA string from the human gnome project. IEEE itself lamented this situation and included instructions on how to copy and paste the addresses from the email into web browsers. This was needed for email clients that inserted carriage returns into URLs which would span more than one line in an email.

How about this article from June 2004 regarding price reductions for IEEE publications? Just go to:

[http://www.theinstitute.ieee.org/portal/site/tionline/menuitem.m.130a3558587d56e8fb2275875bac26c8/index.jsp?&pname=institute\\_level1\\_article&TheCat=2202&article=tionline/legacy/inst2004/june04/6w.newsjournalpricing.xml&](http://www.theinstitute.ieee.org/portal/site/tionline/menuitem.m.130a3558587d56e8fb2275875bac26c8/index.jsp?&pname=institute_level1_article&TheCat=2202&article=tionline/legacy/inst2004/june04/6w.newsjournalpricing.xml&)

IEEE and the Online Institute have taken steps to remedy this situation. Recent emails generally contain URLs that average about 30 characters in length and they generally don't burrow as deeply into the site as they once did. Here at the Nebraska Section, the executive committee saw the same problem in accessing our section's home page on the web located at:

<http://www.ewh.ieee.org/r4/nebraska/index.html>.

Say that three times quickly. We longed for a web address which would roll across the palate as smooth as a '97 California Pinot Noir.

After some deliberation, the committee settled upon two domains, namely **www.ieeene.org** and **www.ieeenebraska.org**. Both domains point to the same server run by Nebraska Onramp in Bellevue, Nebraska. As this newsletter goes to print, we are attempting to mirror the information available at our old site onto this site with its' modified format. Eventually, visiting the old site at [www.ewh.ieee.org/r4/nebraska/](http://www.ewh.ieee.org/r4/nebraska/) will automatically redirect your web browser to the new site.

A shorter web address was not the only reason behind this move. Our old site, hosted by IEEE, had many restrictions on format and services. By moving to our own domain, we hope to soon implement online event reservations where a form prompts you for the necessary information for the event. We also want to include provision to prepay for events online with a credit card.

We hope our new web site will become a frequent stomping ground for Nebraska Section members where you can more easily contact the section officers, keep up on section events, and find the information and services which you need. To meet these goals, your executive committee hopes to expand the site's content, links, and FAQ list. Comments and suggestions for the site are welcome. Send them to [webmaster@ieeene.org](mailto:webmaster@ieeene.org).

### **OUR LATEST SENIOR MEMBER**

Congratulations to Mohamad I. Doghman, our latest senior member. Mohamad is a member of the Power Engineering Society and works for Omaha Public Power District as Manager of the Substation and System Protection Department. He has been involved in consulting, design, operation, maintenance, and management work. Mohamad has also been instrumental in introducing new technologies and programs at OPPD. His diverse experience has helped him become a valuable member of OPPD's leadership team. Mohamad has been an IEEE member for 18 years. He is a registered professional electrical engineer, and holds BSEE from UNL and MSEE from UMC.

Interested in the requirements for becoming a senior member? Check our website for more information or contact Al Kaspar, our Membership and Development Chairperson.

## **NEBRASKA IEEE HOTLINE (888) 752-4333 (IEEE) Omaha: 552-4333 (IEEE)**

By Pierce Carpenter

Use these phone numbers to get informed about upcoming meetings. Add the number to your cell phone! The 888 number forwards into the Omaha number. If you're in Omaha calling area, you can save NE IEEE the long distance charges by dialing the local 552 number.

### **IEEE COMMUNICATIONS SOCIETY**

By Pierce Carpenter, NE ComSoc Chair

The IEEE Communications Society or ComSoc is a community comprised of a diverse group of industry professionals with a common interest in advancing all communications technologies. To that end, the Society sponsors publications, conferences, educational programs, local activities, and technical committees.

At the local level, the Nebraska ComSoc fosters an excellent forum to keep members up with the latest in technology. A second benefit is to provide a common venue for networking in the communications profession. This has been used to make friends, find leads, find experts and sometimes just to have fun.

### **IEEE PKI – THE PERFECT MENTOR FOR THE 21ST CENTURY TECHNOLOGY STUDENT...**

By Hamid Sharif

The Peter Kiewit Institute (PKI), located in Omaha at 67th and Pacific streets, houses the college of information technology UNO, the college of engineering UNL and an invaluable partnership with local area businesses. PKI is also home to the IEEE Student Chapter.

The main goal of the IEEE Student Chapter at PKI is to enable its members to reach their full academic potential while providing an environment for professional and career growth. This is achieved through a variety of events, programs and services offered through out the academic year.

IEEE-PKI runs a parts store providing students a one-stop shop for parts for laboratory kits and projects. Considering the "hands-on" aspect of the CEEN curriculum, providing parts on campus is not just a privilege but a necessity. For the past couple of years, chapter officers have embraced this challenge with great zeal. Driven by a spirit of volunteerism, officers and members alike strive to lead by example in or out of class.

The IEEE student chapter at PKI also addresses issues affecting the entire engineering profession – lack of diversity. The chapter is supporting the idea of having more women in engineering through a unique partnership with the Society of Women Engineers (SWE) Student Chapter. In addition, developing awareness for engineering careers is one of the top priorities for the chapter during the new academic year.

The chapter president is Eric Kwete, a senior student in Computer Engineering and Computer Science. For more information on IEEE-PKI, please visit [www.ieee.unomaha.edu](http://www.ieee.unomaha.edu) or send an email to Eric at [ekwete@ieee.org](mailto:ekwete@ieee.org)



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