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East Tennessee Section Report for R3 Excom meeting

### **Introduction:**

East Tennessee Section will have members attending the Region 3 meetings at the 2014 Sections Congress. Our goals are to stay connected with other sections within Region 3 as well as stay informed of activities in our region. Our section also wants to connect internationally with other regions outside of the United States.

### **2014 Goals:**

Increase community awareness of IEEE and the local section

-Community involvement through (Volunteering): TN Science Bowl held at PSCC; Tennessee FIRST Robotics; East TN Science Fair; University of Tennessee E-Week; increased involvement of UT students and PSCC students at monthly meetings, Excom meetings, and volunteering

Increase membership attendance at meetings

-Poll of technical meeting subjects

-Increased incentives – Give aways at meetings, attendance awards at last meeting

-Increased involvement of new Membership recruitment officer – required on new member recruitment meeting and membership development meetings about life membership and senior membership

Continued sponsorship of IEEE events and well as science related events

-Charitable donations made to: TN Science Bowl, FIRST Robotics (FRC and FLL), East TN Science Fair, High school Science Competition teams, and High school Science development programs

### **Membership Activities:**

Monthly meetings

-June 2013: NovaCopy will discuss options in the local area for 3D printing, Nova copy will bring a scanning device and demonstrate scanning already existing components and creating 3D models which can be imported into the 3D printing environment. (Joint meeting with SME)

-July 2013: The tour will include a brief history of the Scripps Technology Center campus, from the Sherrill Horse Stables to the current Scripps Networks Interactive Technology Center which serves as the world HQ for Scripps Networks Interactive, and is the host facility for all of SNI's domestic cable channel play-out. The tour will include stops in the original television studios, Network Operations, Satellite Transmissions, and the CTEC room (Consumer Technology Experience Center) where the latest consumer technology is showcased.

-August 2013: Tour of Provision Center where you can see the development of a center in East Tennessee offering the most innovative cancer treatment in the world.

-November 2013: Vuviane Schwarts will present about Novel Class of Catalysts for Bio-Oil Upgrading. A very important focus of the current research in chemistry and engineering is the development of a clean alternative technology that utilizes a sustainable feedstock and transforms it into fuel. In the case of transportation fuels, the use of biomass as a renewable source of carbon is a promising alternative since the biomass-derived biofuels technology implementation does not require extensive changes to the transportation infrastructure and the internal combustion engine. In this scenario, the fast pyrolysis is an efficient and inexpensive primary route to produce liquids from lignocellulosic biomass, which is the cheapest and most abundant source of biomass. The quality of produced liquids (the so-called bio-oils) can be improved by eliminating oxygenated functionalities, and hydroprocessing is a well-established and widely employed in the current petroleum refineries. The challenge is to be able to utilize the current petroleum refining catalysts under bio-oil conditions. For instance, the active sulfide catalysts (e.g., supported CoMo, NiMo sulfides) utilized in petroleum refinery are not stable under low-sulfur content of the bio-oils. In this work, we assessed the potential of molybdenum carbides in bio-oil hydroprocessing since it has a noble metal behavior without the toxicity and cost issues related to noble metals. The results were promising suggesting that it is possible to design robust and active catalysts for

without the scarcity and cost issues related to noble metals. The results were promising suggesting that it is possible to design robust and active catalysts for bio-oil hydroprocessing using inexpensive carbides.

-February 2014: The robotics teams at the University of Tennessee will describe and demonstrate their approaches to the upcoming robotics competition. Teams from both the UTK graduate and undergraduate electrical engineering programs will be competing in March at the IEEE Southeast Conference.

-March 2014: Mike Paulus will present on ORNL and Its Technology Transfer Program. Oak Ridge National Laboratory is the Department of Energy's largest science and energy laboratory, featuring the nation's most powerful open scientific computing facility, the world's most intense neutron source, and the nation's most diverse energy portfolio. Since its creation in the 1940s, ORNL innovations have contributed significantly to the nation's economic growth through advances including the creation of the medical radioisotope industry, the advancement of the nuclear instrumentation industry, the development of ion implantation, technology licenses to high impact companies. This talk will review some of the lab's most significant contributions to the private sector and describe some of the opportunities that exist today for businesses to engage with the lab. Mike Paulus and the ORNL Technology Transfer Division are responsible for delivering the intellectual property and scientific capabilities of the Oak Ridge National Laboratory to industrial partners to ensure the fullest use of the results of the nation's federal investment in research and development. The technology transfer team fulfills this mission by licensing ORNL intellectual property to industrial partners, negotiating research collaborations (CRADAs) and non-federal Work for Others agreements, and negotiating and managing User Agreements which make ORNL's eleven user facilities available to external partners.

-May 2014: Ned Sauthoff will present on The ITER Project: Progress and Opportunity. Fusion has the potential to yield clean, abundant, safe energy that can be a major contributor to the U.S. energy portfolio in the future. The mission of the international ITER project is to demonstrate the scientific and technological feasibility of fusion energy, using strong magnetic fields to confine fusion fuels in a plasma state hotter than the sun. ITER will be the largest tokamak ever constructed, and is designed to deliver 10 times more power than the plasma heating power. The United States is part of an international ITER partnership with China, the European Union, India, Japan, South Korea and the Russian Federation. The US ITER project office is based at Oak Ridge National Laboratory. The ITER facility is now under construction in St. Paul-lez-Durance, France and the contributing partners are engaged in fabricating components of the ITER tokamak. This presentation will review the basics of fusion power, the overall design of ITER, and the latest construction and fabrication progress both at the ITER site and by ITER partners, with particular emphasis on the activities in the United States. The challenges and approaches of complex international project collaboration will also be discussed.

Upcoming meeting: September 2014-

Ken Carolus of Test Equity will present a basic seminar on EMI (electro-magnetic interference) testing, and an overview of some of the instrumentation used for pre-compliance testing. This session will discuss pre-compliance testing using a spectrum analyzer. Using simple pre-compliance testing before Full Compliance testing can help identify issue early in the design stage to keep cost low. This session will cover basics of EMC basics, terms, and pre-compliance testing examples. Also, the presentation will describe key features of the low cost N9000A X-Series spectrum analyzers using our W6141A EMI pre-compliance measurement application.

September 2014: Young Professional Networking event at Bearden Beer Market. Come out and network with your local young professionals. Learn about IEEE in the local community and what it can do for you. Also, learn about the national benefits of being an IEEE member.

#### **Barriers:**

- Continued Student involvement after graduation: recruiting younger members and getting them involved as officers.
- Continued involvement of retiring community: Life members affinity group started this year.
- Increase women in engineering involvement in the section.

#### **Website:**

-The EastTN section continues to utilize their website as the best form of communication between officers and members. Member can find information about volunteering opportunities, register to attend upcoming meetings, and see awards the section has received along with other information on the website.

Thank you for your time,  
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