



American Institute of Chemical Engineers Knoxville-Oak Ridge Section

For additional information see our Web site at: <http://www.ornl.gov/sci/aiche/>
Or contact: Paula George, georgepm@ornl.gov, (865)576-0603 or
Rita Gray, rgray22@utk.edu, (865)974-5356

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December 2015 Meeting – Joint with SWE (Spouse/Significant Other Night)

Date: Thursday, December 10, 2015
Location: Rothchild Catering and Conference Center, 8807 Kingston Pike, Knoxville TN
5:30 pm Social/Networking (Cash Bar Available)
6:00 pm Dinner \$20 (Cash or Check - **NOTE:** There is no cost for the program or PDH Certificate)
7:00 pm Program – Dr. Pete Ludovice, Georgia Tech, **Feel the Power of the Dork Side**

Abstract – “Feel the Power of the Dork Side” is a hilarious and educational look at science & technology, and their practitioners. Written and performed by Pete Ludovice, the world’s only chemical engineering professor by day and stand-up comedian by night, it will prove that nerds can be funny, and not just funny-looking.
www.drpetecomedy.com

The world’s only touring comedian with a Ph.D. from M.I.T., Pete has performed internationally as a comedian for over a decade, and taught Georgia Tech Chemical Engineers for over two decades. His research activities include the computer modeling of synthetic and biological macromolecules, and the use of humor to improve technical innovation, communication, and education (ludovice.chbe@gatech.edu). One of his National Science Foundation projects examines the use of humor in engineering education. He co-directs the Humor Genome Project (humorgenome.org) and the Geekapalooza Comedy Tour (pwp.gatech.edu/geekapalooza) at Georgia Tech. Pete also hosts “Inside the Black Box,” a weekly radio show on science and technology whose motto is “Science, only funnier” (WREK-Atlanta, 91.1FM, insidetheblackbox.org), and a podcast on the intersection of science and the humanities (www.peteandcharlie.libsyn.com/).

Bio – After completing a Ph.D. in chemical engineering at MIT, Pete Ludovice did postdoctoral research at IBM, NASA, and the Eidgenössische Technische Hochschule-Zürich. He joined the chemical & biomolecular engineering faculty at Georgia Tech after managing the polymer products group for Molecular Simulation Inc. (now Accelrys). Pete is currently the director of the Center for Academic Enrichment at Georgia Tech. He has given numerous seminars and workshops for AIChE and other technical organizations on the application of molecular simulation and the use of humorous improvisation to enhance technical innovation.

FEEL THE POWER
OF THE DORK SIDE

“Dr. Pete’s one-man show is
part stand-up, part song,
and all incredibly smart.”

New Orleans Defender



NORMAL PEOPLE 
THIS EVENT IS SUITABLE FOR PEOPLE WITH A TECHNICAL DEGREE, AND FOR PEOPLE WITHOUT ONE (NORMAL PEOPLE)

Please make your reservations by close of business, December 8, by contacting
Paula George, georgepm@ornl.gov, (865)576-0603 or
Rita Gray, rgray22@utk.edu, (865)974-5356

*The Section will subsidize up to 15 students,
including graduate students*

Ballot — Knoxville-Oak Ridge AICHe Officers for 2016

Chair – Mark Swientoniewski
(Automatic succession)

Chair-Elect (Select one)

☐ Jae-Soon Choi

☐ Write in _____

Secretary (Select one)

☐ David DePaoli

☐ Write in _____

Treasurer (Select one)

☐ Paul Taylor

☐ Write in _____

Director (Select two)

☐ Bonnie LaPierre

☐ Sharon Robinson

☐ Write in _____



Please bring ballots to December meeting, or send by email to: Paula George at georgepm@ornl.gov or by postal mail to:

Knoxville-Oak Ridge Section, AICHe
C/o Paula George,
Oak Ridge National Laboratory,
P. O. Box 2008-6384,
Oak Ridge, TN 37831-6384

Jae-Soon Choi is a Senior Member of the R&D Staff at Oak Ridge National Laboratory. He is currently leading efforts to develop novel catalytic materials for upgrading biomass-derived liquid intermediates to biofuels and biochemicals and automotive emissions controls. He received a B.S. and an M.S. in chemical engineering from Yonsei University and a Ph.D. in chemical kinetics-heterogeneous catalysis from Université Pierre et Marie Curie (Paris 6). Before joining ORNL in 2003, Choi did post-doctoral research at IFP Energies Nouvelles in France.

David DePaoli is an R&D staff member of the Nuclear Materials Processing Group, Nuclear Security and Isotope Technology Division at Oak Ridge National Laboratory. David has worked at ORNL for 30 years and has experience in a variety of chemical- and energy-related research and development projects. He is currently involved in efforts related to radiochemical separations and critical materials. He has previously held several officer positions in the Knoxville-Oak Ridge local section and was a director of the Separations Division of AICHe from 2003 through 2007.

Bonnie LaPierre, EIT received her B.S. in Chemical Engineering from the University of Tennessee, Knoxville in 2008. She is currently working for Bechtel National, Inc. as an Instrumentation & Control (I&C)

Systems design engineer in support of the Uranium Processing Facility (UPF) project at the Y-12 National Security Complex. Bonnie has also worked at Y-12 as a Shift Technical Advisor for the Highly Enriched Uranium Materials Facility (HEUMF). Prior to working at Y-12, she worked as a Control Systems Engineer doing Nuclear Safety Related Accuracy Calculations and Safety Related Nuclear Engineering Setpoint and Scaling Documents in support of I&C Design Engineering for Bechtel Power on the Watts Bar Unit 2 construction completion project. Bonnie is an engineer in training and is currently preparing to take the Tennessee registered professional engineer exam in 2016. She is a member of the American Chemical Society (ACS), American Institute of Chemical Engineers (AIChE) and an active member of the Tau Beta Pi Great Smokey Mountains Alumni Chapter. In addition to her B.S. in Chemical Engineering, Bonnie also has a B.S. in Nutrition and Food Science with a minor in chemistry, which she received in 1989 from Northern Arizona University.

Sharon Robinson has thirty one years experience working at Oak Ridge National Laboratory (ORNL). She has held a number of positions at ORNL ranging from research to program planning to management in technical areas of nuclear and fossil energy, energy efficiency, and environmental management. At the present she is senior staff member supporting environmental management, nuclear materials management, and nuclear fuel cycle programs for the Department of Energy. She received her B.S. in Chemical Engineering from Tennessee Technological University in 1980. She obtained her M.S. and Ph.D. degrees in Chemical Engineering at the University of Tennessee in 1985 and 1992, respectively. She has been active within AIChE throughout her career: AIChE Board of Directors (2014 – Present), Fellow (2009), Robert E. Wilson Award (2009), Executive Board Programming Committee (2009), Chemical Engineering Technology Operating Council (2009 – Present), Research and New Technologies Committee (Chair 2007 – 2008, Vice-Chair 2005 - 2006), National Officers Nominating Committee (2012), Ambassador Program (2007-2008 & 2008 – 2009), Spring Task Force (2007 – Present), Education Division Formation Committee (2008), Alternative Energy Committee (2008 – 2009), Separations Division (Director 2000 – 2003; 2010 - 2015), Nuclear Engineering Division, Center for Waste Reduction Technologies, and Knoxville – Oak Ridge Chapter (Director 1993 – 1994, 2004 – 2006, 2009, 2011 - 2015).

Mark Swintoniewski has 35 years of broad-based chemical, nuclear, and environmental engineering experience. This includes executing projects with Babcock & Wilcox Y12, Bechtel Jacobs Company, and Bechtel National Inc. His experience includes project management, design, and operation of physical, chemical, and thermal treatment systems for nuclear, hazardous and mixed waste applications. Mr. Swintoniewski has prepared and negotiated numerous permit applications with the EPA and state regulatory agencies; and has conducted many incinerator emission tests. His experience includes remedial investigation/feasibility studies (RI/FS), resource recovery and treatment technology design and operation, Superfund site investigations, innovative technology research and development, pilot-plant and laboratory design and operation, and analytical development. Mr. Swintoniewski received a Bachelor of Science degree in Chemical Engineering from Virginia Tech in 1979.

Paul Taylor, P.E., is a senior development engineer in the Nuclear Security and Isotope Technology Division at Oak Ridge National Laboratory. He has been the membership chairman of the local section for many years, and has previously served as Chair, Treasurer, and Director of the local Section. Paul is a registered professional engineer, and is a member of the National Society of Professional Engineers and the Water Environment Federation in addition to AIChE.

Position Available – College of Engineering at the University of South Florida

The College of Engineering at the University of South Florida invites applications and nominations for the position of Professor and Chair in the Department of Chemical & Biomedical Engineering. The new chair will have a unique opportunity to impact the direction and trajectory of a department with a vibrant research environment, a commitment to excellence in undergraduate and graduate education, and a strong record of engagement with industrial and community partners. Applicants must electronically submit the application packet to the following website:

<http://www.usf.edu/administrative-services/human-resources/careers/index.aspx> (Applicants must Search Job Opening ID: 8719). Review of applications will begin on December 15, 2015 and will continue until the position is filled.

The Department of Chemical & Biomedical Engineering (<http://www.chbme.eng.usf.edu>) has 16 faculty members along with several affiliated faculty and offers the B.S., M.S., and Ph.D. degrees (Biomedical Engineering is currently a graduate-level program only). Research programs are funded by competitive grants from NSF, DOE, and NIH, as well as state and private funding sources. The faculty members have strong collaborations with all departments within the College of Engineering, as well as the Colleges of Medicine, Arts & Sciences, Behavioral and Community Sciences and Education. In addition, the faculty members have strong ties with several centers and institutes at USF, which include leadership roles in the Global Center for Hearing and Speech Research, Clean Energy Research Center, Florida Energy Systems Consortium, and Functional Materials Research Institute. Strong collaborations exist with members of the H. Lee Moffitt Cancer Center and Research Institute, Center for Assistive Rehabilitation Robotics & Technologies, Center for Wireless and Microwave Information Systems, and USF Health Byrd Alzheimer's Institute. The undergraduate program graduates approximately 75 students per year. The number of graduates per year has been increasing and is expected to continue growing. Undergraduate students are highly involved with research and internships as well as forming an outstanding AIChE student chapter for several years and hosting the regional AIChE meeting last year.

(Source: Email from John N. Kuhn, Associate Professor, Department of Chemical & Biomedical Engineering, University of South Florida)

UT Student Poster Presentation at December Meeting

University of Tennessee Chemical and Biomolecular Engineering PhD student, Naijia Hao, will present a poster on her research, which is focused on the thermal conversion of biomass and biomass components to biofuels, at the December meeting of the Knoxville-Oak Ridge Section of AIChE. You are invited to either come at 5:30 p.m. or stay after the regular meeting to talk with Naijia about her work.



Naijia Hao

Abstract – It is imperative to develop sustainable supplementary fuel platforms due to increasing global energy demand and growing concerns for environmental issues related to fossil fuel usage. Advancements in biomass research will be a key factor towards the development of sustainable and green energy platforms.

One thermal treatment of lignocellulosic biomass is pyrolysis. Pyrolysis is the irreversible thermal decomposition of materials in the absence of oxygen. The complex polymer constituents of lignocellulose (lignin, cellulose and hemicellulose) break down to simpler molecules. The pyrolysis productions contain char, gas, and a pyrolysis oil. The pyrolysis oil (also known as bio-oil) has the potential to be blended in the transportation fuels; however, the poor properties limit the oil's application, e.g. bio-oil has acidity, high viscosity and high oxygen content. Thus, it is critical to improve the bio-oil's properties; moreover, the understanding of the pyrolysis oil components becomes one of the most essential parts of pyrolysis research, which could contribute to the following upgrading process.

In the current research work, the effects of auto-hydrolysis of the whole biomass on the pyrolysis products are being studied. The pine-wood sawdust is hydrolyzed before pyrolysis (pretreated group). The pyrolysis products are analyzed by GPC, FTIR, ^{31}P NMR, HSQC-NMR, elemental analysis, and the results are compared to the samples without auto-hydrolysis (control group).

Bio – Born and raised in Hefei, China, Naijia Hao attended Dalian University of Technology in 2010 and graduated with a bachelor's degree in chemical engineering in 2014. During the junior and senior years, she participated the project "Fluorescent Probes for Live-Cell Nucleic Acid Imaging" led by State Key Lab of Fine Chemicals. Later, she joined the Department of Chemical and Biomolecular Engineering at UTK to pursue her Ph.D. degree, working in Dr. Arthur Ragauskas research group. Her Ph.D. thesis research is mainly focused on the thermal conversion of biomass and biomass components to biofuels. She is also serving as a teaching assistant in the CBE department of UTK this semester.

Activities Calendar

Date	Time	Topic	Speaker	Location
Dec 10	5:30 PM	Feel the Power of the Dork Side: A Humorous and Educational Look at Science and Engineering and Their Practitioners – Joint with SWE (Spouse/Significant Other Night)	Pete Ludovice, GA Tech	Rothchild's, Knoxville TN
Jan 21	6:00 PM	Critical Materials Institute	Bruce Moyer, ORNL	Rothchild's, Knoxville TN
Feb XX	6:00 PM	Joint with ANS - TBD	TBD	TBD
Mar 10	6:00 PM	Joint meeting with UT – Urban Forestry Program	Kasey Krouse	UT Ag Campus
Apr 14	6:00 PM	Energy Choices and Consequences	Harold "Lee" Dobbs, UT	Rothchild's, Knoxville TN
Apr XX		UT Department of Chemical & Biomolecular Engineering Awards Banquet		TBD
May 12	6:00 PM	Super Hydrophobic Coatings	TBD	Rothchild's, Knoxville TN

Sponsoring Opportunities

We continue to accept advertising in the newsletter in order to provide funds to support student participation in the meetings.

Rates per newsletter are:

\$80 full-page advertisement

\$45 half-page advertisement

\$25 quarter-page advertisement

The section will also continue to accept individual or corporate sponsors to provide student meals at section meetings. The sponsor will be recognized at the meeting and in the Newsletter.

The cost to sponsor one meeting is **\$200**. It's a great way to encourage students to attend the local meetings and become future members in the Institute!



Ben Shassere, a summer student in ORNL's Monolithic Systems Development Group, is assisting with research related to magnetic cooling effect (MCE) technologies –

Photo courtesy of the DOE Photo Archive at:

<https://www.flickr.com/photos/oakridgelab/4867075514/>

"Optimism is the faith that leads to achievement. Nothing can be done without hope and confidence."

Officers

Chair:	Kyle Mack	(423)747-7947	kylematthewmack@gmail.com
Chair-Elect:	Mark Swientoniewski	574-1150	swientoniem1@cns.doe.gov
Secretary:	David DePaoli	574-6817	depaolidw@ornl.gov
Treasurer:	Paul Taylor	574-1965	taylorpa@ornl.gov
Directors:	Bonnie LaPierre	241-6521	lapierrebl@y12.doe.gov
Term 2015-2016	Stuart Daw	946-1341	dawcs@ornl.gov
Term 2015-2016	Bamin Khomami	974-2421	bkhomami@utk.edu
Term 2014-2015	Michael Aident	441-5354	michaelaident@gmail.com
Term 2014-2015	Sharon Robinson	574-6779	robinsonsm@ornl.gov
Membership:	Paul Taylor	574-1965	taylorpa@ornl.gov
Newsletter:	Paula George	576-0603	georgepm@ornl.gov
Editor/Webmaster:	Ben Lewis	574-4091	lewisbejr@ornl.gov
E-mail:			aiche-chat@chem.engr.utk.edu
Website			http://www.ornl.gov/aiche

Helen Keller
American author, political activist, and lecturer (1880-1968)

Knoxville - Oak Ridge Section

P.O. Box 2008
Bldg. 4500N, Room B12
Oak Ridge, TN 37830-6243

Phone: 574-1965
Fax: 574-6872

E-Mail: [aiche-
chat@chem.engr.utk.edu](mailto:aiche-chat@chem.engr.utk.edu)



We're on the Web!

See us at:

<http://www.ornl.gov/sci/aiche/>

Editor: B. Lewis

About Our Organization...Operating Councils

AIChE's governance includes three Operating Councils that lead the Institute's efforts to realize the three elements of AIChE's Vision: Providing value as the global leader of the chemical engineering profession, as the lifetime center for professional and personal growth and security of chemical engineers, and as the foremost catalyst in applying chemical engineering expertise in meeting societal needs.

The Operating Councils work with the various entities that make up AIChE—divisions, forums, committees, local sections, student chapters, etc.—to assure that they are aligned with the needs of the members and with each other.

Career and Education Operating Council (CEOC)

The Career & Education Operating Council is focused on the "lifetime center" concept of membership. Accountabilities include professional development, career and financial services, and AIChE's role in chemical engineering degreed education.

Chemical Engineering Technology Operating Council (CTOC)

The Chemical Engineering Technology Operating Council is responsible for two major areas: first, the frontiers of chemical engineering—in other words, knowledge advancement; and second, the dissemination of that knowledge. Accountabilities include meetings and publications.

Societal Impact Operating Council (SIOC)

The Societal Impact Operating Council is leading efforts to define how chemical engineers can most effectively address societal needs. Accountabilities include outreach and public policy, diversity of the profession, and the global business environment

AIChE Structure

In addition to AIChE's board of directors, presidents, the institute operates with leadership from multiple organizational entities, including 3 operating

councils that help lead the Institute's efforts to realize AIChE's Vision.

(Source:
<http://www.aiche.org/community/leadership/operating-councils>)

P.O. BOX 2008
BLDG. 4500N, ROOM B12
OAK RIDGE, TN 37830-6243