



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 2014 Meeting – Bring Your Spouse Night

Date: Thursday, December 18, 2014
Cost: \$20
Location: Rothchild Catering and Conference Center, 8807 Kingston Pike, Knoxville TN
5:30 pm Executive Committee Meeting (All members welcome)
6:00 pm Dinner – Menu
7:00 pm Program – David Moon, Moon Capital Investments, **A Quick Look at Interest Rates – 5000 BC to Present**

Abstract – If you are over the age of 50, you probably remember the 1980s when CD and mortgage rates were in the mid-to-high teens. If so, today's interest rates seem unsustainably low, especially in historical context. That is, if your sense of history correlates anywhere close to your personal experience.

But what if we look at interest rates over an even longer period—say 7,000 years or so? How do today's rates compare in that context? David Moon will discuss historic interest rate trends, including changes in lending and collateralization practices over the past seven millennia.

Bio – David Moon is President of Moon Capital Management. His editorial writing has been featured in the Wall Street Journal, Barron's and Corporate Board Member magazine. He currently pens a weekly commentary for newspaper publisher Scripps. Prior to Maria Bartiromo's departure from CNBC, David was a regular guest on her "After the Bell" segment.

David is also the author of Thoughts Are Things®, a collection of daily devotionals for elementary and middle school-aged students and their families. The book received the top award for best Juvenile Inspiration book of 2013 by the Beverly Hill-based National Indie Excellence Awards.

David earned bachelor's and MBA degrees (both cum laude) from the University of Tennessee, where he was named a member of the Academic All-Southeastern Conference football team his senior year. He was an adjunct professor in the finance department of his alma mater from 1995 to 2002 and earned the Chartered Financial Analyst designation in 1995.

Along with his wife of 29 years and their 14-year-old twins, David lives on an east Knox County farm where his life regularly resembles old episodes of "Green Acres."

Bring Your Spouse / Significant Other

Please make your reservations by close of business, December 16, 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

TSPE Banquet Announcement



Fellow Professional:

You are invited to join us on Thursday, February 19, 2015 for a celebration of STEM educators, engineers, and their impact on society. In conjunction with Engineer's Week, the Knoxville Chapter of the Tennessee Society of Professional Engineers (TSPE) is hosting a banquet to raise funds to support our local STEM educators. Proceeds from the banquet will be used to help fund the Grants for Engineering, Arithmetic, and Science (GEARs) Education Program, and our new college scholarship program. The GEARs Education Program is designed to provide small grants for schools or teachers promote STEM education. Due to your generosity we implemented a scholarship program for junior and senior engineering majors this year as well.

We will be honoring the 2015 grant and scholarship recipients at the banquet.

The banquet will be held at the Knoxville Marriott on Hill Avenue. Our guest speaker will be John Eschenberg, Federal Project Director for the Uranium Processing Facility Project at the Oak Ridge National Security Complex. In May 2012, John was appointed as the project director for the UPF. This \$6.5 billion investment is Tennessee's largest post-war construction project and represents the NSA's single largest capital investment. John has over 25 years of industrial experience in a variety of defense, commercial, and Department of Energy settings having had responsibility for several multi-billion dollar design and construction projects. He has held employment with Halliburton-NUS Corporation, Brown & Root Environmental Corporation, and the Department of Navy.

John holds a Bachelor of Science degree, Summa Cum Laude, from the University of Maryland and is also a graduate of the Federal Executive Institute in Charlottesville, Virginia and the Executive Management Program at the Sloan School of Management at the Massachusetts Institute of Technology. He was recognized as the National Management Association's Executive of the Year for 2009.

For this year's event, there are three categories of sponsorship:

- Speaker Sponsors
- Event Sponsors
- Table Sponsors

Details are described on the attached request form. All sponsors will be recognized for their contribution as part of the banquet. Another option for table sponsorship is to sponsor a charitable table. If you have involvement with a local school or organization that you would like to see involved in Engineer's Week, this would be a great opportunity to introduce them to engineers. Please contact Aaron Crenshaw if you would like to sponsor a charitable table.

Please mail the attached form with your contribution before February 12, 2015 to:

Mr. Aaron Crenshaw, P.E.
Fulghum, MacIndoe, & Associates
10330 Hardin Valley Road, Suite 201
Knoxville, Tennessee 37932

Make checks payable to the "Tennessee Society of Professional Engineers", and list the banquet on the memo line.

Thank you for your support and I hope to see you at the banquet.

Sincerely,

Aaron Crenshaw
Banquet Chair, TSPE-Knoxville Chapter

2015 TSPE BANQUET REGISTRATION FORM

—FINAL DEADLINE FEB 12th, 2015—

Place: Knoxville Marriott on Hill Avenue

Date: Thursday, February 19th, 2015

Time: 6:00 p.m. Social Hour
7:00 p.m. Program and Dinner

Speaker: John Eschenberg, Federal Project Manager for the Uranium Processing Facility

Menu: Apple bourbon stuffed pork tenderloin, roasted garlic potatoes, julienne vegetables, salad, rolls, dessert*
*dietary restrictions can be accommodated, contact Aaron Crenshaw for details

SIGN UP: Name: _____ Company: _____

Organization (ASCE, IEEE, etc.): _____ Contact No.: _____

TICKETS & SPONSORSHIPS – see attached for more information on sponsor options.

Reservation	___ Individual Reservation	\$50
	___ Student Reservation	\$25
Event Sponsors	___ Speaker (max. of four Speaker Sponsors)	\$2,000 min.
	___ Platinum	\$1,200
	___ Gold	\$800
	___ Silver	\$600
Additional Items	___ Additional Tables	\$500
	___ Charitable Table (See letter for details)	\$400
		Total: _____

Names of Attendees: _____

This is important so that everyone can have a nametag. Use the back of this page if necessary.

All proceeds go to fund the Grants for Engineering, Arithmetic, and Science Program and the Knoxville TSPE scholarship fund. All sponsors will be recognized at the banquet. Call Aaron Crenshaw (251-5070) for further information. Sponsor information must be received by the deadline to insure your organization is recognized during the banquet.

REPLY TO: Send your reservation and/or sponsorship to:

Mr. Aaron Crenshaw, P.E.
Fulghum, MacIndoe, & Associates, Inc.
10330 Hardin Valley Road, Suite 201
Knoxville, TN 37932
(865) 251-5070
Email: crenshaw@fulghummacindoe.com

Make checks payable to the "Tennessee Society of Professional Engineers", include the banquet in the memo line.

2015 TSPE BANQUET SPONSORSHIP INFORMATION

Send your sponsorship form and check by February 12, 2015 to:

Aaron Crenshaw
 Fulghum, MacIndoe, & Associates
 10330 Hardin Valley Road, Suite 201
 Knoxville, TN 37932
 (865) 251-5070

Sponsorship & Price	Recognition & Included Items
<p align="center">Speaker Sponsor \$2,000 (min.)</p>	<p align="center"><u>Two tickets at Speaker's Table</u> Company Sign on Podium Participation in Slide Show* Recognition During the Program Listed in Program</p>
<p align="center">Platinum Event Sponsor \$1,200</p>	<p align="center">Banquet <u>Meal for 10</u> Participation in Slide Show* Shown on Display Board, Listed in Program</p>
<p align="center">Gold Event Sponsor \$800</p>	<p align="center">Banquet <u>Meal for 5</u> Participation in Slide Show* Shown on Display Board Listed in Program</p>
<p align="center">Silver Event Sponsor \$600</p>	<p align="center">Banquet <u>Meal for 2</u> Shown on Display Board Listed in Program</p>
<p align="center">Table Sponsor/Additional Table \$500</p>	<p>Sponsorship of a table (10 meals), or if you need additional seating beyond the meals included in other sponsorship packages.</p>
<p align="center">Charitable Table \$400</p>	<p>If you would like to sponsor a table for a group of people (teachers from a particular school, Boy/Girl Scout Troop), please contact Aaron Crenshaw. Organizations sponsoring charitable tables will be recognized during the evening.</p>
<p>* There will be a continuously running slide show during the social hour and during dinner. The slide show will highlight the represented engineering organizations and sponsors.</p>	

Ballot — Knoxville-Oak Ridge AIChE Officers for 2015

Chair – Kyle Mack
(Automatic succession)

Chair-Elect (Select one)

Mark Swientoniewski

Write in _____

Secretary (Select one)

David DePaoli

Write in _____

Treasurer (Select one)

Paul Taylor

Write in _____

Director (Select two)

Stuart Daw

Bamin Khomami

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

Stuart Daw is a native of Florida; receiving his B.S. in Chemical Engineering from the University of Florida and his M.S. and Ph.D. degrees in Chemical Engineering from the University of Tennessee. Dr. C. Stuart Daw (P.E.) is currently a UT-Battelle Corporate Fellow in the Energy and Transportation Science Division of the Oak Ridge National Laboratory (ORNL) and a Fellow of the American Institute of Chemical Engineers. He is also a faculty member in the University of Tennessee Bredesen Center for Interdisciplinary Research and an adjunct faculty member in the Departments of Chemical and Biomolecular Engineering and Mechanical, Aerospace, and Biomedical Engineering. He has worked at ORNL since 1979, primarily in combustion, catalytic reaction engineering, waste treatment, and applications of nonlinear dynamics and chaos theory. Prior to that time he was employed by DuPont where he specialized in chemical reactor modeling and process development. Dr. Daw has over 150 publications on combustion, multi-phase transport phenomena, catalysis, and nonlinear dynamics applications to engineering systems. Dr. Daw is a member of the American Institute of Chemical Engineers and the Combustion Institute, the ORNL representative to the American Flame Research Committee, and a former member of the Board of Advisors of the Central States Section of the Combustion Institute. He is currently a Director of the Knoxville-Oak Ridge Section of the American Institute of Chemical Engineers.

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 (ORNL). David has worked at ORNL for over 25 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.

Bamin Khomami graduated from the Ohio State University with a B.S. in Chemical Engineering and a minor in Mathematics in 1983 (Summa Cum Laude) and obtained his M.S. and Ph.D. in Chemical Engineering at the University of Illinois-Urbana in 1985 and 1987, respectively. He joined Washington University in 1987 as an Assistant Professor and was named the Francis F. Ahmann Professor of Chemical Engineering in 1997. In fall of 2006 he joined the University of Tennessee in Knoxville as the Granger & Beaman Distinguished University Professor and Head of the Chemical and Biomolecular Engineering Department. In January of 2008, he was named the founding director of the Sustainable Energy Education and Research at the University of Tennessee. In addition, between 1992 to 2006, he served as a visiting Professor of Chemical Engineering at Stanford University, Universidad Nacional De Education A Distancia, and the Technical University of Denmark.

Kyle Mack is a professional engineer working in his fifth year with Merrick and Company as a Process Engineer contractor for the Department of Energy. He is currently pursuing a Master's in Business Administration through Tennessee Technological University and has his Bachelors of Science in Chemical Engineering from the University of Tennessee. Other work experience involves green engineering projects with the Oak Ridge National Laboratory and work rotations at Eastman Chemical Company.

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. 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.

Local Section Votes to Serve as Bronze Sponsor for Tennessee Science Bowl

The Knoxville-Oak Ridge Section of AIChE voted to become a Bronze Sponsor for the Tennessee Science Bowl (TSB); providing a donation of \$150. The TSB will be held on February 27 and 28, 2015, with registration from 3-5:30 on February 27, 2015 at the Hilton Knoxville Airport in Alcoa, TN and the completion beginning at 8:00 a.m. on February 28 at the Blount County campus of Pellissippi State Community College.

The TSB is a question-and-answer competition in which two student teams attempt to answer toss-up and bonus questions. The competition questions cover physics, chemistry, Earth and space science, mathematics, biology, and energy. Teams are randomly placed in their divisions and play against the other teams within their division during round-robin competitions. The top two teams in each division advance to the single-elimination rounds in the afternoon. The Tennessee Science Bowl is open to any school or homeschool association in the state of Tennessee. Schools may have two teams if space is available. A maximum of two homeschool teams per county will be selected. Second teams will be selected according to the earliest registration dates (first come, first served).

For additional information on the TSB and opportunities for service to support this event, see the TSB web-site at: <http://www.orau.gov/sciencebowl/teams/index.html>.

(Excerpts taken from TSB web-site, <http://www.orau.gov/sciencebowl/teams/index.html>)

UT Student Poster Presentation at December Meeting

University of Tennessee Chemical and Biomolecular Engineering student, Kevin Quigley, will present a poster on his research teams work, titled: *White adipose tissue but not enlarged livers are sinks for nanoparticles in diet-induced and genetic mouse models of obesity*, 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 Kevin about his work.



Abstract – Since almost 70% of the U.S. population is overweight and 30% is obese, with much of the western world following suit, many patients that will potentially be administered circulating nanoparticles designed to localize to tumors and avoid non-target areas will have significant amounts of white adipose tissue (WAT), enlarged livers, and additional metabolic complications such as type 2 diabetes. However, studies on nanoparticle biodistribution and efficacy take place almost without exception in lean rodents. Here, we determined the biodistribution of model nanoparticles – neutral filomicelles and charged polystyrene spheres carrying near infrared (NIR) dye - as a function of mouse diet, weight, and metabolic condition. In obese *ob/ob* mice lacking the hormone leptin, which regulates appetite control, nanoparticles accumulated in the WAT in higher amounts than in the spleen, which was previously the focal point of macrophage-induced nanoparticle clearance. However, the localization of nanoparticles to WAT seems to be a passive mechanism since the NIR signal per WAT weight was much lower than for the liver and spleen. Surprisingly, nanoparticle accumulation in the liver remained constant even in obese mice with liver mass four-times that of lean mice. Both of these localization results were independent of nanoparticle geometry and charge. From these observations we postulate that the metabolic condition of the patient will drastically change the efficacy of current nanoparticle technologies.

Bio – Kevin Quigley received his B.S. in Chemical Engineering from the University of Notre Dame in 2011. In August of 2011 he enrolled in the graduate program in the Chemical and Biomolecular Engineering Department at the University of Tennessee Knoxville. He has worked for three years in the laboratory of Dr. Paul Dalhaimer. His current research aims to improve the efficacy of nanoparticle technologies in the treatment of diseases with cancer as a main focus. In particular, he is focused on the effects of patient metabolic condition at the onset of cancer and how various metabolic imbalances affect nanoparticle biodistribution.

Activities Calendar

Date	Time	Topic	Speaker	Location
Dec 18	6:00 PM	A quick look at interest rates - 5000 BC to present	David Moon, Moon Capital Investments	Rothchild's, Knoxville TN
Jan 15	6:00 PM	What is everything made of? The quest for the ultimate building blocks of the physical universe – Joint with ASM	Soren Sorenson, UT Physics Department	Sun Sphere Restaurant, Knoxville TN
Feb 19	6:00 PM	Pu-238 Production – Joint with ANS	Bob Wham, ORNL	Rothchild's, Knoxville TN
Mar 12	6:00 PM	Proton Therapy	TBD	Rothchild's, Knoxville TN
Apr 16	6:00 PM	3D Modeling and Engineering	Jack Kissell, ModernTech	ModernTech, 1626 Downtown West, Knoxville
Apr XX		UT Department of Chemical & Biomolecular Engineering Awards Banquet		TBD
May 14	6:00 PM	TBD	TBD	McClung Museum

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!



Mirror Fusion Test Facility, an experimental magnetic confinement fusion device built using a magnetic mirror at Lawrence Livermore National Laboratory, <https://www.flickr.com/photos/departmentofenergy/9324124112/in/set-72157632605552001/>

Officers

Chair:	Bonnie LaPierre	241-6521	lapierrebl@y12.doe.gov
Chair-Elect:	Kyle Mack	(423)747-7947	kylematthewmack@gmail.com
Secretary:	David DePaoli	574-6817	depaolidw@ornl.gov
Treasurer:	Paul Taylor	574-1965	taylorpa@ornl.gov
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"The difference between the impossible and the possible lies in a person's determination"

Tommy Lasorda
Former Major League
baseball player
(1927)

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We're on the Web!

See us at:

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

Editor: B. Lewis

About Our Organization...Education Opportunities

AIChE offers a variety of continuing education options for chemical engineers, including a variety of online courses offered through the eLearning Center and developed by renowned engineers and other experts. In addition, AIChE offers in-person, classroom-style courses on chemical engineering essentials and specialty fields.

Adding skills is one of the best ways to make sure your career remains on track. And one of the best ways to add new skills is by taking courses from the AIChE [catalog](#). Courses from core operations to process safety to biotechnology to sustainability and project management are available. AIChE offers courses developed and taught by

recognized experts with operational and instructing expertise. Learn process safety from the professionals at CCPS, the Center for Chemical Process Safety. Learn about biomanufacturing from the Society for Biological Engineering. Sustainability courses are offered by the Institute for Sustainability. Or choose from the wide range of courses developed by AIChE.

(Source: <http://www.aiche.org/resources/education>)

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