



American Institute of Chemical Engineers Knoxville-Oak Ridge Section

For additional information see our Web site at: www.ornl.gov/sci/aiche/
Or contact: Linda Puckett, puckettlf@ornl.gov, (865)574-6147 or
Cristina Wilson, csoto@utk.edu, (865)974-2421

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May 2012 Meeting

Date: Thursday, May 10, 2012
Cost: \$5
Location: Frank H. McClung Museum, Knoxville, TN - Park along the circle drive in front of the museum (just across from the torchbearer statue). No parking passes are needed. Come in the front door, and a guard will be available to direct you to the correct location.
5:30 pm AIChE Executive Committee Meeting (All members welcome),
6:00 pm Pizza and soft drinks at the Museum
7:00 pm Program – **Dr. Henri D. Grissino-Mayer**, Professor in the Department of Geography at the University of Tennessee – *Dendrochronology and the Science of Tree Rings: Mother Nature Confronts Human Nature*

Abstract - Dendrochronology has its beginnings in the early 1900s when astronomer Andrew Ellicott Douglass first investigated tree rings for a possible signal related to sunspot activity, and in the process formulated the principles that today guide the discipline. Douglass later embarked on an ambitious project that eventually dated the exact year the construction of 29 pueblos in the American Southwest, permanently earning the field a highly respected place in the toolkits of many additional disciplines. Today, dendrochronology has evolved into a highly quantitative science based on the principle that a tree ring can be dated to one year and one year only with exact precision. The field has specialized techniques for collecting samples in the field and for obtaining quantitative data from the tree-ring record, relying on the principle of crossdating that ensures exact temporal placement of each and every tree ring through both graphical and statistical procedures. Dendrochronology has been applied to a wide array of disciplines, especially in climatology, archaeology, ecology, geomorphology, seismology, and volcanology. The tree-ring record has helped us understand, for example, past changes in climate over the Holocene (the last 10,000 years), and have clearly shown periods of favorable and unfavorable climate lasting decades and even centuries in many parts of the world. Archaeologists continue to reap benefits by using tree rings to date the construction year of prehistoric and historic features. Tree-ring data are continuously used to better understand forest dynamics, especially the history of past wildfires, and the impact humans have had on changing the successional trajectories of these forests. Despite the benefits of the science, dendrochronology faces new challenges in light of recent developments, such as a well-establishment break in the linkages of temperature and tree growth during the 20th century that may have implications for our ability to reconstruct hemispheric-wide temperature trends.

Bio - **Henri D. Grissino-Mayer** (Ph.D. 1995 University of Arizona, M.A. 1988 University of Georgia, B.S. 1985 University of Georgia) is a Professor in the Department of Geography at the University of Tennessee and Director of the university's Laboratory of Tree-Ring Science. See complete Bio on page 3.

Please make your reservations by noon on May 10, by contacting

Linda Puckett, puckettlf@ornl.gov, (865)574-6147 or
Cristina Wilson, csoto@utk.edu, (865)974-2421

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

Information about the Frank H. McClung Museum

The McClung Museum is a general museum with collections in anthropology, archaeology, decorative arts, local history, and natural history. The exhibits document ways of life, cultural trends, and technologies from prehistoric times to the present day, and showcase much of Tennessee's past — its geology, history, art, and culture. The McClung Museum is a special place — a place of discovery, a place to learn about the world around us. As a part of the University of Tennessee, the Museum supports and participates in the university's mission to serve the state, region, and nation through scholarship, teaching, artistic creation, professional practice, and public service. The professionalism and high caliber of the Museum are reflected in its accreditation by the American Association of Museums. The McClung Museum is one of only 12 museums in Tennessee to be so recognized.

CURRENT EXHIBITS AT McCLUNG MUSEUM

- [Ancient Egypt: The Eternal Voice](#)
- [Archaeology & Native Peoples of Tennessee](#)
- [The Decorative Experience](#)
- [Geology & Fossil History of Tennessee](#)
- [Human Origins: Searching for our Fossil Ancestors](#)
- [The Battle of Fort Sanders](#)
- [Tennessee Freshwater Mussels](#)

Special Exhibit - Continents Collide: The Appalachians and the Himalayas

Curated by **Professor and Distinguished Scientist Robert D. Hatcher, Jr.** and **Assistant Professor Micah Jessup**, both from UT's Department of Earth and Planetary Sciences, the exhibition focuses on the formation of mountain ranges and the forces that continually alter them. Our own beautiful landscapes of East Tennessee and western North Carolina, part of the Appalachian Mountains, whose genesis was more than 250 million years ago, is one focus of the exhibit; the other is the striking and rugged Himalaya Mountains, the much younger and still rising result of tectonic movements, the global effects of which we learn about often in the news.



View in the fall southward from the Blue Ridge Parkway near Waynesville, NC



Summit of Mount Everest, the highest peak in the world (8850 meters above sea level), as viewed from Rongbuk valley, Tibet



Tilted layers of gneiss in the Chattooga River, GA-SC



Metamorphic rocks injected by lighter granite veins on a vertical cliff with glacial ice above and below, near Cho La pass (5300 m) in region southwest of Mount Everest

Introducing the subject in the gallery will be a fifteen minute video, created by award-winning producer Steve Dean (the Heartland Series) and featuring views of a number of sites in the Blue Ridge and Smokies sections of the Appalachians as well as original images of Himalayan locales and the Tibetan plateau. The dynamics of plate tectonics and processes of erosion are explained in animated segments.

Breathtaking as the surface topography may be, the exhibit will also delve into the structure of the respective ranges, as that is where the keys to the how and the why may be found. Three-dimensional maps, video animations, and of course, rocks will show visitors how we know what we know, and perhaps give viewers a new way to look at the world as well as the landscape around them. The past, the present, and the tectonic future await.

About our Speaker – Dr. Henri D. Grissino-Mayer

Henri D. Grissino-Mayer (Ph.D. 1995 University of Arizona, M.A. 1988 University of Georgia, B.S. 1985 University of Georgia) is a Professor in the Department of Geography at the University of Tennessee and Director of the university's Laboratory of Tree-Ring Science. He studies ecosystem disturbance processes and uses dendrochronology, the science of tree rings, to address changes in these processes both spatially and temporally. His research concentrates on analyzing the history of past wildfires and the history of past climate, and how climate change possibly mediates changes in wildfire regimes. He has given or co-presented over 360 professional presentations and published over 90 peer-reviewed papers. His research was selected by *Discover Magazine* as one of the "Top 50 Science Stories of 1992" and "Top 100 Science Stories of 2005," and in 1998 he received the inaugural Alton A. Lindsey Award for Research and Resource Stewardship given by the National Park Service and the National Parks and Conservation Association. At the University of Tennessee, he has been awarded the College of Arts and Sciences' Junior Research and Creative Achievement Award in 2003, the Chancellor's Award for Professional Promise in Research and Creative Achievement Award in 2005, and the Chancellor's Award for Extraordinary Service to the University in 2009. He has been Principal Investigator on grants totaling over \$5 million, investigating everything from wildfires to climate change to hurricanes to log structures to musical instruments, all using tree rings. He, his laboratory, and his students have appeared in television documentaries shown on the History Channel, the Discovery Channel, the Investigation Discovery Channel, the Learning Channel, the Weather Channel, the National Geographic Channel, and Court TV.

UT Chemical and Biomolecular Engineering Department Award Winners

The U.T. Chemical and Biomolecular Engineering Department Award's dinner was held on April 26th. The local Section presented \$100 awards to Erika Agahan for the AIChE Outstanding Student award and to Daniel Howell for the AIChE Outstanding Baccalaureate award. Two projects were presented, "Electrochemical Characterization of Non-Precious-Metal Catalysts for Oxygen Reduction in PEM Fuel Cells" by Jeremy Brooksbank, and "Efficient production of biofuels in whole cell biocatalysts" by Katie Lutes and Akshitha Yarrabothula. The Section presented \$25 awards to the three speakers.

Author: Paul Taylor



Fig. 1. Outstanding student award winner, Erika Agahan.



Fig. 2. Outstanding Baccalaureate award winner, Daniel Howell

Activities Calendar

Date	Time	Topic	Speaker	Location
May 10	6:00 PM	McClung Museum Tour	Prof. Grissino-Mayer	McClung Museum at UT
Oct 28-Nov 2		2012 Annual Meeting		Pittsburgh Convention Center
August		Local Section Planning Meeting		

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!



(Synthesis of air sensitive organometallic compounds at ANL. Source: <http://www.doedigitalarchive.doe.gov/enter.cfm>)

"The five essential entrepreneurial skills for success are concentration, discrimination, organization, innovation and communication."

Michael Faraday

1791 - 1867

British scientist, chemist, physicist, and philosopher

Officers

Chair:	Jarrold Clark	276-1867	jarrod.clark@merrick.com
Chair-Elect:	Abhijit Tarafder	974-0735	abhijit.tarafder@ion.chem.utk.edu
Secretary:	David DePaoli	574-6817	depaolidw@ornl.gov
Treasurer:	Paul Taylor	574-1965	taylorpa@ornl.gov
Directors:	Michael Aident	694-7333	Michael.Aident@shawgrp.com
Term ends 2012	Michael Hollander	300-5645	enviroms@att.net
Term ends 2012	Sharon Robinson	574-6779	robinsonsm@ornl.gov
Term ends 2014	Thomas Busmann	453-3538	tbusmann@focusenv.com
Term ends 2014	Kyle Mack	(423)747-7947	kylematthewmack@gmail.com
Membership:	Paul Taylor	574-1965	taylorpa@ornl.gov
Newsletter:	Linda Puckett	574-6147	puckettlf@ornl.gov
Webmaster:	Ben Lewis	574-4091	lewisbejr@ornl.gov
E-mail:			aiche-chat@chem.engr.utk.edu
Website			http://www.ornl.gov/aiche

Knoxville - Oak Ridge Section

P.O. Box 2008
Bldg. 7920, Room 5
Oak Ridge, TN 37830-6384

Phone: 574-6147
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:
www.ornl.gov/sci/aiche/

Editor: B. Lewis

About Our Organization – Membership Grades

AIChE membership is one of the best things you can do for your professional development, no matter what stage of your career you are in. There is no better way to meet as many accomplished chemical engineers. Or to tap into such a deep reserve of specialized information. For each stage of your life, membership has its advantages:

STUDENT MEMBERS shall have the exclusive privileges of representing themselves as Student Members and of wearing the emblem of membership, and shall also have the privileges that are common to all classes of membership, but not the privileges of nominating, voting, and holding office. A Student Member may not retain this class of membership beyond the end of the calendar year in which he or she is last enrolled as a student.

MEMBERS shall have the exclusive privileges of representing themselves as Members and of wearing the emblem of membership, and shall also have the privileges of nominating and voting for officers and directors and the privileges that are common to all classes of membership. They shall also have the privileges of holding office and of voting on amendments to this Constitution after 4 years as a Member (a 4-year Member). A Member may, after regular application and election, become a Senior Member.

SENIOR MEMBERS shall have the exclusive privileges of representing themselves as Senior Members, of wearing the emblem of membership, of holding office, and of voting on amendments to this Constitution, and shall also have the privileges of nominating and voting for officers and directors and the privileges that are common to all classes of membership.

FELLOWS are Senior Members who have satisfied the Fellow Bylaw requirements and have demonstrated significant accomplishments in, and contributions to, the profession. Senior Members may be nominated for consideration to be elected Fellow by either a Fellow or Senior Member in good standing. Additional information on the requirements for becoming a FELLOW of the AIChE is given at: <http://www.aiche.org/memberscenter/fellows/becoming.aspx>.

(Excerpts from the national AIChE web site at: <http://www.aiche.org/joinnow/membersgrades.aspx>)

P.O. BOX 2008
BLDG. 4500N ROOM B-12
OAK RIDGE, TN 37831-6243

