



SIGMA XI NEWSLETTER

Iowa State University
September 2009

CALENDAR 2009-2010

SIGMA XI NATIONAL LECTURER

*Role of Engineers in Managing Risks
From Natural Hazards*

Professor Robert B. Gilbert
University of Texas, Austin

Tuesday, October 13, 2009
8:00 p.m., Alliant Energy-Lee Liu Auditorium
Howe Hall
(please note day and location)

Managing risks from natural hazards has taken on greater significance as the world becomes more interconnected and interrelated. Local disasters can now impact everyone, such as the high prices of oil in the wake of Hurricane Katrina. Also, the available resources to manage risk in the world as a whole are severely limited. Engineers are essential in providing civilization with technically effective solutions that balance costs, benefits and risks. This talk will address the important role of engineers in managing risks from natural hazards. Topics will include establishing goals, mitigating consequences, considering system effects, including physical factors in statistical models, avoiding both too much and too little conservatism, maximizing the value of information, and communicating effectively to decision makers and the public. Applications from around the world, ranging from offshore facilities to coastal flood control systems, will be used to illustrate and demonstrate the main ideas.

LOCAL HONOR LECTURER

*Cooking, Fishing and Jogging through Phase Space:
A Practical Guide to Discovering (and Understanding)
New Materials*

Professor Paul C. Canfield
Department of Physics & Astronomy, ISU

Thursday, November 12, 2009
8:00 p.m., Alliant Energy-Lee Liu Auditorium
Howe Hall

Dr. Paul C. Canfield, Distinguished Professor in Liberal Arts and Sciences and the holder of the Robert Allen Wright Chair in Physics, has spent over a score of years in condensed matter physics, earning an international reputation for discovering and developing new materials. His work combines physics, chemistry, and metallurgy and is specifically focused on the properties of conducting and magnetic materials. In this lecture Dr. Canfield will outline the basic philosophy and techniques needed to search for novel materials. These include a combination of intuition, experience, compulsive optimism and a desire to share discovery. The lecture will be general and include side comments, mildly slanderous asides and references to philosophers living and dead.

October 13, 2009 (Tuesday). Professor Robert Gilbert, University of Texas, Austin, will deliver a National Sigma Xi Lecture at 8:00 p.m. in the Alliant Energy-Lee Liu Auditorium, Howe Hall – see page 1. Reception will follow.

November 12, 2009 (Thursday). Professor Paul Canfield, Physics & astronomy, ISU, will deliver the Local Honor Lecture at 8:00 p.m. in the Alliant Energy-Lee Liu Auditorium, Howe Hall – see above. Reception will follow.

December, 2009. Forms for the nomination of Associate and Full Members, for Undergraduate Research Scholars and for the Promotion of current Associate Members will be available from the Secretary-Treasurer; they will be sent to Department Executive Officers and Department Representatives early in January. Nominations are to be sent to the Secretary-Treasurer, Harry Weiss, 1200 Howe Hall. Preferred deadline for receipt of nominations is February 15, 2010, for timely review by the Committee on Membership. Questions on procedures or qualifications can be addressed at any time to Harry Weiss, 294-5666 or 296-5051. The Winter Newsletter (early January) will contain a reminder, a summary of the nomination procedures and a nomination form. Guidelines for nomination are a part of the nomination form. Nomination forms are available online via the National Sigma Xi Website: details will be noted in the January 2010 Newsletter.

February 15, 2010. Nominations for Promotion, Associate and Full Membership and Undergraduate Research Scholars are due: c/o H.J.Weiss, Sigma Xi, Aerospace Engineering, 1200 Howe Hall, ISU.

February 25, 2010: National Sigma XI Lecturer Dr. Lawrence Papay, CEO and Principal of PQR, LLC, National Academy of Engineering, will present a lecture in the area of Renewable and Sustainable Energy. Time and location TBA.

March 1, 2010: Invitations will be sent to those whose nominations have been approved by the Committee on Membership.

March 22, 2010. Deadline for receipt of acceptances from nominees for membership or promotion.

April 12, 2010. Deadline for receipt of ballots for election of committee members.

April 29, 2010 (Thursday). The Annual Initiation Banquet will be held in the Scheman Building. At this event, the initiates (who are the Chapter's guests at the Banquet) are installed as members of Sigma Xi; Undergraduate Research Scholars are recognized and awarded the Lester Earls prize; the Zaffarano Prize for Graduate Student Research is awarded; the Karas Dissertation Award is announced; and the new President is installed. The evening begins with a social hour at 5:30, followed by dinner and the necessary initiation formalities. The evening will conclude with an address by the retiring President, Steven Kawaler, at 8:00 p.m., *Moving Upstairs – One Astronomer's View of Why We Must Do Astronomy from Space*.

PRESIDENT'S MESSAGE

As always, the summer went by very quickly this year and, as you read this, we are well into the start of the 2009-2010 academic year. Let me welcome you back to Iowa State for this year.

In 2010, the ISU Chapter of Sigma Xi celebrates the 90th anniversary of our founding, while the National Society of Sigma Xi turns 124 years old. The longevity of our Society has been a result of active participation of members in the various programs - lectures, grants, meetings, and a common commitment to enjoying the company of fellow scientists and engineers who value research and interactivity.

This year's lecture program, assembled by President-Elect Steve Martin, includes several nationally recognized lecturers. The fall program includes a local Honor Lecture from Prof. Paul Canfield, Distinguished Professor in Physics and Astronomy. In October, we will welcome Sigma Xi National Lecturer Dr. Robert Gilbert, from the University of Texas. Details about these two evening lectures are given elsewhere in this newsletter. We also expect to continue the Science Cafe' programs that Bill Simpkins initiated last year - stay tuned for details later this fall. Look for more exciting programs this coming spring, including the Annual Initiation Banquet in April.

Sigma Xi has not been immune to the difficult financial times, and in addition we have felt the changing demographics in the science and engineering community related to the aging of the Baby Boomer generation. These are challenging times for our local Chapter as well as for the National Society - membership and participation are decreasing at an alarming rate. While engaging events like this year's program of activities can maintain interest, what we need (more now than ever) is for our local members to do their parts to help sustain the Society.

The most important way you can help is to nominate colleagues and students for membership in Sigma Xi. Increasing our membership will provide new blood that can help invigorate the society for years to come. You will find a nomination form in the next Newsletter, but you can obtain one right now at the Sigma Xi website:

<https://www.sigmaxi.org/member/join/nom.pdf.html>

Membership benefits include our lecture series, access to the Grants in Aid of Research Program which provides \$1000 in funding to young scientists, fellowship with lively colleagues from a range of disciplines who share a broad curiosity about science and technology, and last (but not least) the top-rank American Scientist magazine. You should also nominate deserving students for the Zaffarano Prize for Graduate Research and the Karas Award for Outstanding Dissertation in the Behavioral Sciences.

Another way you can help is by communicating with the current Sigma Xi Executive Committee with your ideas for programs and activities. The Members of the Executive Committee are listed at the end of this Newsletter. Consider serving on our Membership or Nominating Committee. Your help in keeping the ISU Chapter of Sigma Xi active will be warmly welcomed.

If you have any questions about how you can help, please don't hesitate to contact me or any of the members of the Executive Committee - we look forward to hearing from you, and to seeing you at our events this coming year. Best wishes to all for a successful and productive 2009-10.

Steven Kawaler, President

GENERAL COMMENTS

We need to have you begin to think about those graduate students and colleagues whom you would wish to nominate for either Associate or Full Membership in Sigma Xi, or for Promotion from Associate To Full Membership. We also encourage you to consider those outstanding undergraduates who have had a research experience and whom you would wish to honor by nomination as Undergraduate Research Scholars. Generally, these Scholars would be initiated as Associate Members; however, an especially research-productive undergraduate might well qualify for Full Membership. General requirements for nomination as an Undergraduate Research Scholar are a good GPA (3.50 or better) and contribution to an original research investigation which has led to a written report, a presentation at an appropriate meeting and/or (preferably) a publication. Details will be given in the *Guidelines for Nomination* which you will receive together with a nomination form in the Winter, 2010 Newsletter. Nomination forms may also be obtained electronically via the Sigma Xi Web site: <http://www.sigmaxi.org/membership/nompromoinfo.htm>.

Note also, that recognition as an Undergraduate Research Scholar carries with it not only a certificate but also a monetary award, the Lester Earls Award, made possible by a generous contribution to the ISU Chapter by Professor Emeritus Lester Earls. We do publicize this honor to undergraduates, so do not be surprised by questions you may be asked.

Each of us needs to contribute the small amount of time necessary to recognize deserving colleagues through election to membership in Sigma Xi. Please take a little time to identify individuals who have impressed you with their achievements or the research aptitudes necessary for membership.

Please let us know of any new faculty or graduate students who are Sigma Xi members and who should be on our mailing list. Also, please let us know if your address is incorrect. We wish to encourage inactive members to pay their current dues and become active (past arrears in dues need not be made up; payment of 2009-10 dues will reactivate your status). We encourage ISU members and active Ames residents who have other affiliations to join the ISU Chapter. If you wish to change your affiliation or return to active status, please contact me for assistance.

Harry Weiss, Secretary-Treasurer
Aerospace Engineering
1200 Howe Hall
4-5666, 296-5051

2008-2009 MEMBERSHIP ACTIONS

There were 53 in attendance at the Initiation Banquet, including 18 initiates. However, there was a total of 23 initiates, plus one individual promoted. The initiates fell into the following categories: 16 new Full Members (plus the individual promoted to Full Membership), and 7 new Associate Members; one Undergraduate Research Scholar; 6 graduate students, 1 faculty from elsewhere, and 15 current ISU faculty. Of the new Full Members, two were Zaffarano Prize Winners. There were two new Golden Anniversary Members recognized.

The Banquet and Initiation Ceremonies were followed by the Retiring President's Address, William Simpkins, Professor of Geological & Atmospheric Sciences, ISU: *The Future of the Ames Aquifer Through the Eyes of Computer Modeling*

2009 INITIATES

FULL

`Mahdi M. Al-Kaisi	Agronomy
Scott P. Beckman	Materials Science & Engineering
Emmanuel Byamukama	Plant Pathology
Adam J. Clark *	Geological & Atmospheric Sciences
Shangkui Du	Food Science & Human Nutrition
Maria G. Salas-Fernandez	Agronomy
Aaron J. Gassmann	Entomology
Emily A. Heaton	Agronomy
Qiang Huang	Food Science & Human Nutrition
John W. Mabry	Animal Science
Rajeev Madhavannair	Mechanical Engineering
Matthew E. O'Neal	Entomology
Jeffry D. Sander *	Geological & Atmospheric Sciences
Mingmin Shen	Chemistry
Kenneth J. Stalder	Animal Science
Qingjie Sun	Food Science & Human Nutrition

* Zaffarano Prize

PROMOTIONS

Jin-Sook Lee	Physiology
--------------	------------

ASSOCIATE

Deepak Dibya	Chemistry
Jelena Gutesa	Food Science & Human Nutrition
Hongxin Jiang	Food Science & Human Nutrition
Carlie Ann LaLone	Food Science & Human Nutrition
Peter J. Lammers	Animal Science
Mathew R. O'Neil	Animal Science
Rachel E. Scheurer *	Civil/Constr/Environ Engineering

* Undergraduate Research Scholar

OFFICERS OF THE CHAPTER

President	Steven Kawaler
President Elect	Steven Martin
Secretary-Treasurer	Harry J. Weiss

COMMITTEE ON MEMBERSHIP

Jeanne Stewart	2007-10
Patricia Thiel	2007-10
Mark Gleason	2008-11
Carol Vleck	2008-11
Amy Bix	2009-12
Nick Christians	2009-12

Executive Committee

P. Jeffrey Berger	2007-10
Steven Kawaler	2007-10
Harry Horner	2008-11
Steve Martin	2008-11
Diane Birt	2009-12
Frederic Janzen	2009-12
Harry Weiss	1992-

**NOMINATING COMMITTEE
(one-year terms)**

Bonnie Bowen	Rolf Koford
	Curtis Struck