TRANSPORT

The University of Houston Department of Chemical and Biomolecular Engineering Spring 2011

Remembering Neal R. Amundson

Neal Amundson, *Cullen Professor Emeritus of Chemical and Biomolecular Engineering and Professor of Mathematics, passed away in February at the age of 95.*

Widely regarded as one of the most prominent chemical engineering researchers and educators in the country, Amundson was a pioneer of chemical reaction engineering. His research contributions to the field included analyzing and modeling chemical reactors, separation systems, polymerization and coal combustion.

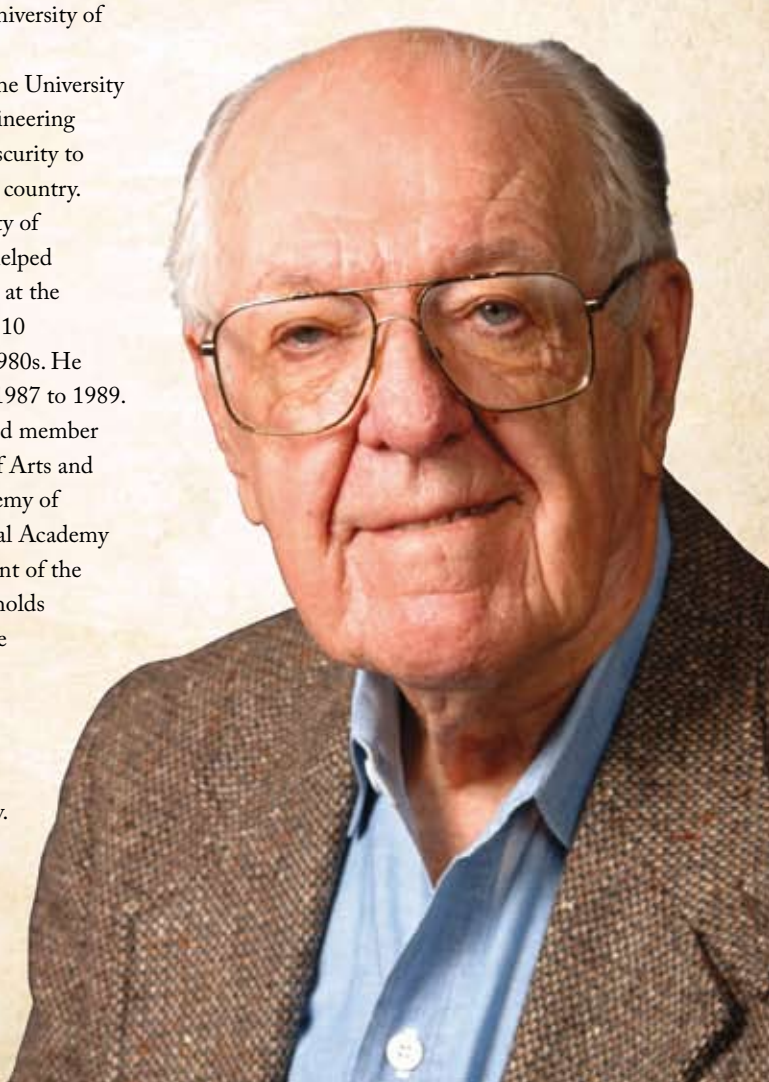
Just as important as his research, so was his impact on chemical engineering practice and education.

Amundson took over leadership of the University of Minnesota's chemical engineering program in 1949. At that time, chemical engineering education across the country was focused on industrial processes, with students expected to memorize facts about these processes and show their ability to perform them in the lab. Amundson changed that. In a move that would be copied across the world, he redesigned the curriculum to focus not on empirical information but on modern scientific methodology and tools. He pioneered the use of mathematical modeling and advanced solution techniques to predict the behavior of complex chemically reacting systems and processes.

"Neal was one of the leading chemical engineering researchers in the country and took what used to be a rather empirical approach to research and introduced new methods of scientific study that were adopted by chemical engineering programs across the nation," said Dan Luss, a Cullen Professor of Chemical Engineering at UH, who earned his Ph.D. with Amundson from the University of Minnesota in 1966.

Amundson's efforts led the University of Minnesota's chemical engineering department from relative obscurity to a top-ranked program in the country. His addition to the University of Houston in the mid-1970s helped launch chemical engineering at the Cullen College into the Top 10 nationally during the early 1980s. He served as UH Provost from 1987 to 1989.

Amundson was an elected member of the American Academy of Arts and Sciences, the National Academy of Engineering and the National Academy of Sciences. He was a recipient of the NAE Founders' Award and holds honorary doctorates from the University of Minnesota, University of Notre Dame, University of Pennsylvania, University of Guadalajara and Northwestern University. At the University of Minnesota, the building that houses the Department of Chemical Engineering and Materials Science was named "Amundson Hall" in his honor and the UH Department of Chemical and Biomolecular Engineering named its annual lecture series for him. In addition, he was honored by UH with the Esthel Farfel Award, the highest faculty award given at the university.



Newly Remodeled Petroleum Engineering Building Opens to Students

UH Professor
Richard Willson Named
2010 AAAS Fellow

ChBE Professor Richard Willson has been named a 2010 Fellow of the American Association for the Advancement of Science (AAAS), which is the world's largest general scientific society and publisher of the journal *Science*. He was recognized by the AAAS for his "distinguished contributions to biomolecular recognition sciences and its applications and for development of technologies for rapid characterization of catalysts and nucleic acids."

UH Professor Peter Vekilov Named
Fellow of the American Physical Society

For pioneering research in the areas of crystallization and protein aggregation, Peter Vekilov, professor of chemical and biomolecular engineering, has been named a fellow of the American Physical Society. Vekilov's work has had a profound impact in the biological physics community. He discovered the two-step nucleation mechanism, dubbed the Vekilov mechanism, whereby crystal nuclei form inside pre-existing dense liquid droplets. He has also been able to capture and document one of only three mechanisms ever discovered on how molecules attach themselves to crystals.

New Faculty

Patrick Cirino joined the department as an associate professor in Spring of 2011. He received his Ph.D. in chemical engineering from the California Institute of Technology in June of 2003 under the direction of Frances Arnold. From 2003 to 2004 he worked as a postdoctoral research associate at the University of Florida in the microbiology laboratory of Lonnie Ingram. He then began teaching at Pennsylvania State University and was promoted to associate professor in 2010. While at Penn State he developed research programs in the general areas of metabolic engineering and protein engineering, which focuses in E. coli redox metabolism, biocatalyst screening and improvement and regulatory protein engineering. At the University of Houston, biomolecular engineering research in the Cirino lab will continue in the design and implementation of novel small molecule screening systems and customized gene-regulation tools for synthetic biology and metabolic engineering. Specific applications include enhancing microbial production of a variety of pharmaceutically important natural products and chemical intermediates.

The newly remodeled Petroleum Engineering Building in the University of Houston Energy Research Park opened in January. Petroleum engineering is a key element of the UH Energy Research Park and contributes to addressing one of the two strategic topics (energy and medicine) in the UH Tier One initiative.

The refurbished building houses nearly 25,000 square feet of instructional and research space, including three classrooms, three undergraduate teaching laboratories, three faculty research laboratories, a computer lab, and offices exclusively for the use of the Petroleum Engineering Program. The classrooms are being equipped with state-of-the-art recording equipment to enable online review of lectures by students following class attendance.

Petroleum engineering is the first program to bring undergraduate instruction to the Energy Research Park. The inaugural course taught in the new facility is Reservoir Petrophysics for sophomores, exploring rock and fluid properties in petroleum reservoirs. The rest of the Petroleum Engineering Program, including the long-standing successful evening graduate program, will migrate into the new facility this summer. Special thanks to Beth Madison Foundation, Marathon Oil Company, Devon Energy and Southwestern Energy.

Jeff Rimer's Work on Cover of **Science**

Research by Jeff Rimer, assistant professor in chemical and biomolecular engineering, has made the cover of one of the world's most prestigious scientific journals. The work exploring two possible drug targets for combating a rare type of kidney stone appeared in the Oct. 15 issue of *Science*. As one of the college's newest faculty members, Rimer conducted this research as a postdoctoral researcher in the lab of Michael Ward at New York University's Molecular Design Institute.

Jacinta Conrad Uncovers ***'Walking'*** Bacteria

ChBE Assistant Professor Jacinta Conrad and her collaborators have uncovered a new method of bacteria motility that could have implications for everything from food production to military transport. Conrad started this work during postdoctoral research at the University of Illinois at Urbana-Champaign, and her findings appeared in the October 8 issue of *Science*. She is the paper's co-lead author along with Maxsim L. Gibiansky, a graduate student at the University of California, Los Angeles. Her collaborators include Joshua Shrout, assistant professor of civil engineering at the University of Notre Dame; and the senior author, Gerard C. L. Wong, a professor at the University of California, Los Angeles.

Department **Shines in National Rankings**

The University of Houston Cullen College of Engineering boasts one of the nation's top doctoral programs in chemical engineering. That's according to the most recent evaluation of Ph.D. programs released by The National Academies' National Research Council, widely considered the most sound and respected rankings in academia. Based on data from 2005, the chemical engineering Ph.D. program placed 18th in the country in the NRC's survey-based rating, which measures a program against standards set by members of its discipline. The department fared even better in the NRC's research activity evaluation, which factored in publications, citations, the percent of the faculty holding research grants, and recognition of scholarship as evidenced by honors and awards. In this category, the college's chemical engineering Ph.D. program ranked 13th in the country.

FACULTY Kudos

Vemuri Balakotaiah has been named a Hugh Roy and Lillie Cranz Cullen Distinguished University Chair.

Vince Donnelly received the University of Houston Research in Excellence and Scholarship Award.

Demetre Economou has been named a Hugh Roy and Lillie Cranz Cullen Distinquished University Chair.

Micky Fleischer received the University of Houston Teaching Excellence Award in the instructor/clinical category.

Michael Harold has been named an M.D. Anderson Professor and received the Fluor Daniel Faculty Excellence award.

Dan Luss was the 2010 recipient of the Neal R. Amundson Award for Excellence in Chemical Reaction Engineering.

Peter Vekilov was elected vice president of the International Organization for Biological Crystallization. A profile of his research appeared in the September/October issue of the *Progressive Engineer.*

Richard Willson, has been named a John and Rebecca Moores Professor.

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Alumni HAPPENINGS

Submit a class note at http://www.egr.uh.edu/news/submissions

Veronique Tran (BSChE '91), Director of Learning through Discovery (UHQEP), was elected chair of the Connecting Alumni to Students Committee and the ChBE Reunion in the Fall of 2009. As leader, she organized a committee and they are diligently working on an alumni reunion in the Spring of 2011 and a 60th Anniversary Celebration for the UH Department of Chemical and Biomolecular Engineering in 2012.

ChemE Reunion 2011

Thursday, **April 7**, 2011

ENGINEERING COMMONS • 6:00 – 9:00 p.m.

ChemEs ComeC

Join us for **mixer, elixirs and tours!**
Connect with past, present and future chemical engineers.

Register before April 1st to reserve your seat for this free event. Guests welcome.
Visit the ChemE Reunion website for details and registration:
http://egr.uh.edu/eaa/activities/reunions/chemical/

Reunion hosted by

HOUSTON ALUMNI ASSOCIATION
ENGINEERING ALUMNI

UNIVERSITY of HOUSTON | ENGINEERING
Department of Chemical & Biomolecular Engineering

60th Anniversary Celebration
of the **Department of Chemical and Biomolecular Engineering** (1952-2012)

We are seeking alumni volunteers to help plan 2012 anniversary events and reunion!
To volunteer, contact Veronique Tran at veronique.tran.uhcheme91@gmail.com.

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