Professor Robert Linhardt Selected as 2009 AAAS Fellow

Robert Linhardt, the Ann and John H. Broadbent Jr. ’59 Senior Constellation Professor of Biocatalysis and Metabolic Engineering has been selected as a fellow of the American Association for the Advancement of Science (AAAS). Linhardt is one of 531 newly selected fellows recognized for their efforts to advance science or its applications that are deemed scientifically or socially distinguished, according to AAAS. The announcement was made in the December 18, 2009, issue of the journal Science.

In the announcement, AAAS cites Linhardt for “distinguished contributions to pharmaceutical chemistry, particularly for research on the structure, activity, and synthesis of the anticoagulant drug heparin and related polysaccharides.” AAAS will honor the new fellows at its annual meeting on February 20, 2010, in San Diego, California. “Professor Linhardt’s work to develop a safer alternative to one of the most widely used drugs in American hospitals has made him a world-recognized leader in his field,” said Rensselaer Polytechnic Institute President Shirley Ann Jackson, who also is a former president of AAAS. “He is an exceptional researcher as well as teacher and mentor. His tireless dedication to both his laboratory and his students makes him exceptionally deserving of this prestigious recognition, and we are proud to have him as a colleague at Rensselaer.”

Linhardt has helped to make the currently available heparin safer for patients, helping to discover a contaminant in the drug that made hundreds of patients ill in 2008. He is also leading the effort to create a safer, fully synthetic alternative to the current heparin, which is harvested from the intestines of livestock.

Linhardt and Jian Liu at the University of North Carolina discovered the “recipe” for synthetic heparin three years ago. In August 2008, at the national conference of the American Chemical Society, Linhardt announced that his team had constructed minuscule carbohydrates into a purer, safer alternative — creating the first fully synthetic heparin, and the largest amount ever created in the laboratory.

With Linhardt’s discovery, a fully synthetic heparin can be created in a pharmaceutical manufacturing environment, giving drug manufacturers extreme control over the safety and purity of the product. He believes that within five years, it is possible that this drug could reach human clinical trials.

Government agencies and numerous foundations and corporations have provided extensive funding for Linhardt’s research. An active contributor to professional publications, Linhardt has served on the editorial board of such top journals as the Journal of Biological Chemistry, Applied Biochemistry and Biotechnology, and the Journal of Carbohydrate Chemistry. He has published more than 450 research papers and holds 45 patents. In 2009, Linhardt was one of 10 people — alongside U.S. President Barack Obama and business leader Bill Gates — recognized by Scientific American for his “demonstrated outstanding commitment to
assuring that the benefits of new technologies and knowledge will accrue to humanity.”

After 21 years on the faculty of the University of Iowa, Linhardt joined Rensselaer in 2003 as a senior constellation professor. He earned a master’s and doctoral degrees in organic chemistry from the Johns Hopkins University and a bachelor’s degree in chemistry from Marquette University.

About AAAS The American Association for the Advancement of Science (AAAS) is the world’s largest general scientific society and publisher of the journal Science. AAAS was founded in 1848, and serves some 262 affiliated societies and academies of science, serving 10 million individuals. Science has the largest paid circulation of any peer-reviewed general science journal in the world, with an estimated total readership of one million. The non-profit AAAS is open to all and fulfills its mission to “advance science and serve society” through initiatives in science policy, international programs, science education, and more. News from Rensselaer Polytechnic Institute

Jeffrey Trinkle Awarded a Humboldt Research Prize from the Alexander von Humboldt Foundation in Germany

Jeff Trinkle, Professor of Computer Science, was awarded a Humboldt Research Prize from the Alexander von Humboldt Foundation in Germany. This is an award given by the Alexander von Humboldt Foundation to internationally renowned scientists and scholars. Up to one hundred such awards are granted each year across all fields of study. Past winners include 43 Nobel Prize winners. He will do research in the laboratory of Prof. Dr.-Ing. Gerhard Hirzinger, Institut für Robotik und Mechatronik, Deutsches Zentrum für Luft- und Raumfahrt (DLR) from January 12, 2010 through July 31, 2010.

Boleslaw Szymanski Elected a Foreign Member of the National Academy of Science in Poland

Bolek Szymanski, Claire and Roland Schmitt Distinguished Professor of Computer Science, has been elected a foreign member of the National Academy of Science in Poland. He was elected at the 113th General Assembly of members of the National Academy of Science in a secret vote to approve newly elected foreign members on December 10, 2009. Actual selection of candidates happens at the divisional meetings. There are 7 divisions, including division IV technical science that elected him as a computer scientist. Division IV with about 30 members is equivalent to National Academy of Engineering in the United States as it covers all engineering disciplines, while other sciences have the remaining 320 or so members (the total is 350). Each election is for lifetime. This time 5 new members of division IV were elected.

Jane Koretz Named a Fellow of the Association for Research in Vision and Ophthalmology (ARVO)

Jane Koretz, Professor of Biology, was named a Fellow of the Association for Research in Vision and Ophthalmology (ARVO). This is an honor based on "individual accomplishments, leadership and contributions to the Association."
"The Association's membership, comprised of more than 12,500 individuals, continues to grow. Some 42% of members reside in over 70 countries outside the U.S. The membership is multidisciplinary and consists of both clinical and basic researchers...." (ARVO web site).

Faculty News and Notes

Sibel Adali, Associate Professor of Computer Science, was chosen by the Army Research Laboratory to lead an interdisciplinary project – the Trust Interdisciplinary Research Project – coordinating a team of several dozens researches from many universities and institutions.

Curt Breneman, Professor and Acting Head of the Department of Chemistry and Chemical Biology, and his students had the featured article (cover) of the December issue of JCIM. Details are at http://pubs.acs.org/action/showLargeCover?issue=347093064

Jim Hendler, Sr. Constellation Professor of Tetherless World Research Constellation, will chair the Computer Science Review Committee for Yale University.

Deborah McGuinness, Sr. Constellation Professor of Tetherless World Research Constellation, has been included in a recently generated listing (Nov 2009) of Computer Scientist Researchers with h-indices above 40. http://www.cs.ucla.edu/~palsberg/h-number.html

Dr. Zonghuan Lu, Research Associate in the Physics, Applied Physics and Astronomy Department received the "2010 Thomas Alva Edison Award" on January 8, 2010, from the New York State Wadsworth Health Center for "his inventive and persistent spirit in engineering the microfluidic devices that are making time-resolved cryo-electron microscopy a reality". Dr. Zonghuan Lu has collaborated with the Wadsworth Center scientists on the "Resource for Visualization of Biological Complexity" project funded by NIH since he came to RPI three years ago.

J.M. Dai, Research Assistant Professor in the Physics, Applied Physics and Astronomy Department demonstrated coherent control of THz wave polarization. This work was featured in a special article in Nature Photonics, August issue, 2009. The Optics and Photonic News selected this work for its special issue "Optics in 2009". In addition, using air as THz wave emitter and sensor, Dr. J.M. Dai obtained a pulsed THz field greater than 1 MV/cm with its spectral range over 100 THz. Such a record-strong THz field will be a main source for nonlinear THz spectroscopy.

Biophysical Society Announces Winners of 2010 Student Travel Awards. The Biophysical Society has announced the winners of its student travel award to attend the Biophysical Society’s 54th Annual Meeting at the Moscone Convention Center in San Francisco, California, February 20-24, 2010. The recipients of this competitive award are selected based on scientific merit, with priority given to those who will present a paper at the conference. Each awardee receives a travel grant and will be recognized at a reception on Saturday, February 20. Among the 2010 recipients of the Student Travel Award are: Chun Ju Chen, Graduate Student in Biology, "MECHANISTIC ANALYSIS OF KAR3CIK1 FOR MITOTIC FUNCTION."

The Biophysical Society, founded in 1956, is a professional, scientific society established to encourage development and dissemination of knowledge in biophysics. The Biophysical Society’s Annual Meeting is the world’s largest meeting of biophysicists -over 6,000 attendees are expected. Over 4000 scientific abstracts
have already been submitted for presentation at this event.

**Information Technology (IT)** placed its entire MS in IT December graduates in jobs, with one student receiving a starting salary of $89K. The largest number of MS in IT students graduate each year in December since it is typically a three-semester program.

**Zomega Terahertz Corp**, founded in the Rensselaer Incubator, has contributed more than $1M to our THz research and education. Five new STTR/SBIR grants were received in 2009. They are: Air Force STTR (Phase I), Air Force SBIR (Phase I), Army SBIR (Phase I and II), Navy SBIR (Phase I and II), and NSF SBIR (Phase I and II, and supplemental grant). DTRA SBIR (Phase I) will be awarded in 2010.

### So You Want to Write a Textbook?

Each year for the past seventy years the American Association of Physics Teachers has given an award, the Oersted Medal, to a physicist who has made major contributions to the teaching of physics. In 1974 the award went to Robert Resnick, now Professor Emeritus of Physics at Rensselaer Polytechnic Institute.

The award cited many of his achievements, including his use of limericks in teaching. Chiefly, it recognized one of his many physics textbooks, namely the introductory primer he co-authored with David Halliday. First published in 1960, that textbook — in later editions — is still in use (2010) throughout the world.

Resnick’s response to receiving the Oersted Medal, titled: “So You Want to Write a Textbook”, became much in demand.

[Click here to view him giving the speech](#), 25 years later, as a colloquium talk at The University of Texas in Austin Anyone viewing it will need to download free QuickTime, [http://www.apple.com/quicktime/](http://www.apple.com/quicktime/) and should use Internet Explorer.

### Alumni News

**Tom Ludlam** was named an AAAS Fellow. Tom is a graduate of the Physics, Applied Physics, and Astronomy Department. [http://blogs.physicstoday.org/wht/2010/01/two-brookhaven-lab-scientists.html](http://blogs.physicstoday.org/wht/2010/01/two-brookhaven-lab-scientists.html)

*This newsletter is prepared monthly during the academic year and distributed to School of Science faculty, staff, students and alumni to highlight accomplishments and events within the school. Please submit news items for the next newsletter to Samuel Wait, Associate Dean Emeritus of Science, at waitsc@rpi.edu.*