ASU College of Liberal Arts & Sciences
ARIZONA STATE UNIVERSITY

PHYSICS FLASH

News from the Department of Physics / Vol.1, No. 4

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In the news…

ASU Physics undergraduate Sarah Rupprecht was recently awarded the Best Undergraduate Poster Presentation award at the Four Corners Meeting of the American Physical Society held at the Colorado School of Mines in October. Sarah was one of only four to receive the award for her poster entitled "UV Photo-Enhanced Adsorption of DNA on Mica."

Sarah, who is a junior, is currently working with the Nemanich Nanoscale Science research group studying the effects of DNA adsorption due to UV light and the molarity of MgC12. After graduation, she plans to go on to graduate work in medical physics.

ASU Physics' Professor Martha (Molly) McCartney was a recent recipient of the highly prestigious Ernst-Ruska-Award 2009 of the German Society for Electron Microscopy e.V (DGE). The award was presented at the opening ceremony of the Microscopy Conference 2009 in Graz, Austria on Monday, August 31, 2009. Dr. McCartney shares the award with Professor Rafal Dunin-Borkowski and Dr. Takeshi Kasama of the Danish Technical University, in recognition of their electron holography studies of nanoscale magnetic materials and devices.

ASU Physics *sparkles* at 2009 Homecoming Block Party with diamond display

The ASU Physics tent at the College of Liberal Arts & Sciences Homecoming Block Party is always a place to find interesting, interactive displays that invite attendees to explore how current research in physics touches their daily lives.

The 2009 display featured research of the Nemanich Nanoscale Science group under the leadership of Professor Robert Nemanich. The Nemanich group creates and studies the effectiveness of diamond films as a potential method for reclaiming heat and converting it into electric power. It is hoped that this process will help improve sustainability more efficiently than photo voltaic cells which are typically made of silicon.

Visitors to the ASU Physics tent were able to view various diamond films that had been layered onto metal discs and get a microscopic view the synthetic diamonds used in the research .

The ASU Physics tent also included hands-on activities as well as displays how physics research is addressing sustainability and personal health issues, and how biosensor technologies can help identify root cause of disease.

Special thanks to Professor Nemanich and the Nemanich research group, the Society of Physics Students, Undergraduate Program Coordinator Sabrina Mathues, and Department Manager Peg Stuart for their help in organizing this year's tent.

Photos: (top) Assistant Research Scientist Franz Koeck shows Associate Dean Paul LaPore examples of diamond films; (middle) Michael Christiansen of the Society of Physics Students explains the physics of resonance to a young visitor; (bottom) Researchers Sarah Rupprecht and Yang Sun talk about their work with Deans Quentin Wheeler and Deborah Losse.

Spotlight on...Phani Kumar Kondapani

Phani Kondapani is somewhat of a celebrity in his hometown of Gandhinagar in rural India and with good reason. He is the only student from his village or any of the other 17 villages in the southern state of Karnataka to attend a university outside the country. Phani, a graduate student in the Professional Science Masters (PSM) program here at ASU, was thrilled to receive word he would be attending such a reputable institution like ASU— known for excellence in nanoscience,

This achievement was praised not only locally, but all over the Raichur district in India through numerous articles and photographs in national news papers. In one article titled “Pride of Sindhanur”, the press predicts that through his educational pursuits, Phani will become “a role model for future generations.”

Phani credits his teachers, family, and neighbors for helping him achieve his dream of studying nanoscience. Of course, he had something to do with his recent success as well— having worked hard throughout his schooling to get good grades and excellent GRE scores.

PSM program director and professor of physics, John Venables, notes that Phani is “quite a visionary” in his quest to get solar power to his village perhaps through the application of nanotechnology. Venables has no doubt that Phani will reach his goal.


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ನ್ಯಾನೋ ಸಂಶೋಧಕ

Just two of several articles written about Phani Kumar and his participation in the PSM program at ASU.

ASU Physics celebrates veteran staff member

On Wednesday, November 18th, ASU Physics held a reception honoring Zoe Schildhauer’s 15 years of service to the department. Faculty, staff, and students turned out to thank her for all she’s done for the department over the years. Schildhauer has worked in the business office, most recently as an Accountant Associate, since 1995. Her knowledge of the department personnel and business processes have been a valuable asset especially in the tough budget environment of recent years.

Zoe Schildhauer (right) and fellow business staff member Deborah LaBranche at a reception held in Schildhauer’s honor.

Schildhauer will move to the Mary Lou Fulton Graduate School of Education where she will take on a new role as research advancement associate. A die-hard Sun Devil, Schildhauer will continue a career of dedicated service that spans 25+ years at ASU. Everyone in ASU Physics wishes our dear friend, Zoe, the best of luck as she embarks on this next chapter in her career. Congratulations Zoe! We will all miss you!

ASU Physics' Homecoming 2009—Alumni Corner

1960s

Timothy Boyle '69, B.S. is currently a professor at Kwanwei Gakuin University in Nishinomiya, Japan where he

teaches English, ethics, and serves as chaplain. Although he notes there isn't a lot of physics involved, he includes a "good bit of reference to the sciences, especially as they affect our understanding of ethical issues." He is married and has two daughters. As a freshman biology major at ASU, his first physics instructor inspired him so that he decided to switch majors.

1970s

Richard Gurtler '65 B.S., '68 M.S., '72 Ph.D. . retired from Motorola in 1996 after 29 years in research and research management positions. He received the Dan Noble Fellow, was a Senior Member of the Science Advisory Board Associates, and was awarded 20 patents. He recently cele-

brated his 50th wedding anniversary with wife Doris, daughters Kimberly and Stephanie, son-in-law Jim and grandchildren Gabriel and Alexis.

Barbara Garrison '71 B.S. received her Ph.D. in Chemistry from UC Berkeley in 1975 and is currently Professor of Chemistry and Head of the Department at Pennsylvania State University.

1980s

Eric Clarkson '84 M.S., '85 Ph.D. (Math) is a professor at the University of Arizona in Radiology/Optical Sciences/Applied Math. He is married to Cheryl and is guardian to nephew

Brandon. His favorite memory of ASU Physics was pizza Fridays shared with other physics grad students.

Brent Howlett '81 M.S. has been a research engineer for General Dynamics in Ypsilanti, MI since 1985. He is married to fellow ASU alumna Jayne Worthy-Howlett ('80 B.S.N.) and together they have three children—Nora, Jeff and Allison. He remembers fondly Professor Roland Hanson who recently passed away (read MORE). He notes that Dr. Hanson touched many lives—his included—in such "a positive, loving way."

1990s

John Grinstead '99 B.S. received his Ph.D. in Biomedical Physics from UCLA in 2005. and is currently a Senior Scientist in the Magnetic Reso nance Division of Siemens in Portland, OR. He is engaged to fellow ASU alumna Marisa McKenney ('00 B.A., Communication).

Theodore Biewer '94 B.S. is currently a Staff Physicist at Oak Ridge national Lab working in the Fusion Energy Division. He is married with two children and remembers his advanced lab

courses with the late Roland Hanson, ASU Professor of Physics.

2000s

Carlos Hernandez '07 B.S. is currently a graduate student at Brown University working in the Particle Astrophysics Group under Professor Rick Gaitskell on research aimed at dark mat-

ter detection. He is very grateful to ASU Professor Ricardo Alarcon for helping him through difficult times and for inspiring him to help Hispanic students succeed in physics.

Matthew Harowitz '05 M.S. is a Multidisciplined Engineer at Raytheon, EO Signal Processing in Tucson, AZ. He is married to Rebeccas Harowitz and has three children, Chris, Josh, and Kara. His favorite courses were those he took with Professors David Benin and Bill Kaufmann.

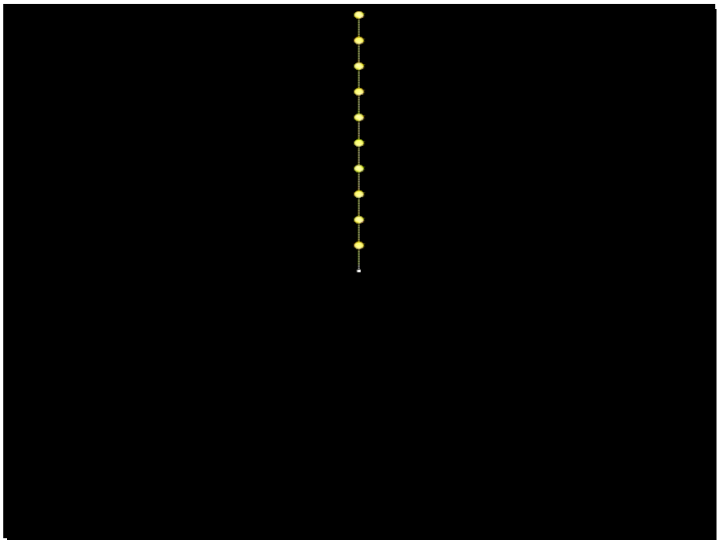
Alumni: Keep in touch by sending us an update at phyflash@asu.edu.

Understanding the effects of chaotic motion on frameworks

Professors Michael Treacy and Michael Thorpe along with post-doctoral research associate Vitaliy Kapko and graduate student Colby Dawson are working on the flexibility of connected framework materials. The video below is a simulation of a pendulum made out of ten masses that are connected by stiff rods. The pendulum is allowed to fall and swing under gravity. The resulting motion is quite chaotic!

The multiple pendula provide the researcher group with a simple system with which they can study how much time connected framework materials spend folded up compared to stretched out. In this way, we can explore the configurational entropy of such linked systems. The goal is to apply these methods to 3-dimensional zeolite framework materials to find out if random thermal motions alone will cause zeolites to fold up into a dense state, or to expand into the maximum-volume state.

The question is "Are zeolites open microporous materials only because of the stiffness of their chemical bonds, or are they inherently open because their thermal motion causes them to spend most of their time in the extended state?"



Click the picture to be taken to the video.

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For more information, visit **our website**
or call **480.965.6794**.

ASU Physics is thankful for
all our terrific students,
dedicated faculty,
and hard-working staff.

We are also thankful for
the friends, family, alumni,
and community partners
who support quality research,
effective teaching, and innovative programs that enhance
the study of physics at ASU.

Happy Thanksgiving!