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PNNL and University of Oregon – Collaboration in Materials Science Research

University of Oregon (UO) students and faculty visited Pacific Northwest National Laboratory (PNNL) on January 18 and 19 to discuss the development of a graduate internship program at PNNL. The visitors, part of UO's Materials Science Institute, toured the William R. Wiley Environmental Molecular Sciences Laboratory (EMSL) and met with PNNL research staff.

"As part of PNNL's efforts to establish stronger relationships in the region with a wide range of partners, we have been working with the University of Oregon to identify ways we could work together to our mutual benefit," Mike Kluse, Associate Lab Director said. "We've chosen to focus our efforts on Multiscale Materials and Devices. The State of Oregon has authorized the creation of a signature research center in Multiscale Materials and Devices, and we are working with both Oregon State University and the University of Oregon in support of that activity."

The graduate internship program is expected to start out as a pilot program this year, with up to eight UO students participating in rotational assignments of 3-5 months at PNNL. The students would conduct part of their thesis work at PNNL under the guidance of a PNNL researcher.



UO students and faculty, joined here by PNNL staff, take a break from a meeting on January 19. UO and PNNL are working out the details for a special graduate internship program that will bring UO students to PNNL for rotational assignments. Bevin Parks (see story on page 2) is second from the right.

The SEE Mission

Science and Engineering Education Programs link the human, financial and technical resources of the Laboratory with the elementary and secondary schools, colleges and universities, and other education-oriented organizations in ways that support the education, diversity and research objectives of the DOE Office of Science, the Pacific Northwest National Laboratory and our education partners.

Bevin Parks Gets Real World Experience at PNNL

UO Ph.D.-candidate Bevin Parks spent the summer of 2003 at PNNL as part of a unique internship program. The program is available to chemistry graduate students in the Materials Science Institute at the UO. The National Science Foundation funds the Institute through its Integrated Graduate Education and Research Training (IGERT) program. The UO works with PNNL, along with a variety of industrial partners, so graduate students can gain valuable, real-world experience in a national laboratory setting.

Parks' internship embodies the spirit of the IGERT fellowship. Parks, a third year graduate student, focuses on the design, synthesis, and evaluation of new organic molecules as agents for nuclear waste remediation. PNNL's Ben Hay, an expert in the computer modeling of radioactive metal-ligand complexes, and Brian Rapko and Shane Addleman, researchers focused on evaluating the effectiveness of the ligands after they are made, worked with Parks. Through this collaborative effort, Parks developed organic molecules as potential ligands for binding actinides with the ultimate application in radiological waste analysis and remediation.

While Parks could have collaborated at a distance by making the ligands and sending them to PNNL for evaluation, the IGERT program enabled her to go to PNNL and gain valuable lab experience and career development. The complementary strengths of the two institutions made for a great collaboration, and Parks' opportunity to travel to PNNL to work on several aspects of the same problem is a great example of what the IGERT program is designed to accomplish.

Parks worked through PNNL's University Relations and Fellowship Programs. Kelly Sullivan, Director of University Relations and Fellowship Programs, is sold on the relationship with the UO. "The University of Oregon's Materials Science Institute is a very forward thinking graduate program in that it emphasizes the need for its students to obtain experience outside of the University," Kelly said. "The students learn things they cannot get experience in at the university, and, for our part, PNNL gets top-notch graduate students participating in our research. It's a win all the way around."

Making a Difference: Science and Engineering Education

Karen Wieda, Science Education Programs

This year 9 of the 20 papers the DOE Office of Science will publish in Volume 4 of the *DOE Journal of Undergraduate Research* are from students who participated in the 2003 Community College Institute (CCI), Faculty and Student Teams (FaST) and Science Undergraduate Laboratory



Internship (SULI) programs at PNNL. Additionally, Jared Fox, Arizona State University, recently had his paper published as the cover article in the *Journal of Young Investigators*. Amy Williams, Gonzaga University, is excited to be one of the authors on a paper accepted for the journal *Ultrasonics Sonochemistry*, published by Elsevier.

PNNL is proud of the accomplishments of these students and the mentors who guided them in their research and the communication of that research. Writing the paper was not always an easy process for student or mentor. It took time, patience, and knowing the paper was an important step in the students synthesizing what they learned during the summer. For most of the students, we hope this paper will be the first of many they publish during their careers.

(continued on page 3)

Making a Difference: Science and Engineering Education

(continued from page 2)

Students had positive feedback about the help their mentors provided in preparing the research paper.

“... encouraged me to start on my research paper as soon as possible so that we can make it the best paper that it can be, not just something thrown together at the end of the internship.”

“...my mentor was a very encouraging person, and helped me through the frustrations of the submission and review processes for my end-of-the-summer paper...”

We would like to congratulate the following students and mentors who participated in DOE Office of Science Internship Programs.

DOE Journal of Undergraduate Research, Volume 4

SULI

- Andrea Busby, “The In Vivo Quantitation of the Organophosphorus Insecticides Diazinon, Chlorpyrifos, and Their Major Metabolites in Rat Blood Using Gas Chromatography with Nitrogen Phosphorus and Flame Ionization Detectors.” Andrea's mentor was Charles Timchalk, Fundamental Science.
- Jacque Dirks, “Improving Modeling of Iodine-129 Groundwater Contamination Plumes Using the System Assessment Capability.” Jacque's mentor was William Nichols, Environmental Technology.
- Aubrey Espana, “Laser-Induced Damage of Calcium Fluoride.” Aubrey's mentor was Wayne Hess, EMSL/Fundamental Science.
- Kurt Koch, “Synthesis and Characterization of Pure and Doped Ceria Films by Sol-gel and Sputtering.” Kurt's mentor was Laxmikant Saraf, EMSL/Fundamental Science.
- Tara Schwartz, “Dust Monitoring on the Hanford Site: An investigation into the Relationship Between TSP, PM-10, and PM-2.5.” Tara's mentor was Brad Fritz, ETD.

CCI

- Duard Crandall, “Development of a Geographic Information System Based Dust Dispersion Modeling System for Use In the Planning and Implementation of Military Training Exercises.” Duard's mentor was Frederick Rutz, Environmental Technology.
- Talayeh Rezayat, “Hyperthermal Energy Collisions of CF₃⁺ Ions with Modified Surfaces: Surface-induced Dissociation.” Talayeh's mentor was Anil Shukla, EMSL/Fundamental Science.
- Vivian White, “On-Line Analysis of Organic Compounds in Diesel Exhaust Using Proton-Transfer-Reaction Mass Spectrometry.” Vivian's mentor was Tom Jobson, Fundamental Science.

FaST

- Anh Quach and Carrie Franks, “Separation & Fixation of Toxic Components in Salt Brines Using a Water-Based Process.” Anh and Carrie's mentors were Harry Smith and Gary Smith, Environmental Technology, and their faculty advisor was Brian Zelinski of the University of Arizona.

Journal of Young Investigators

SULI

- Jared Fox, “Combining Weather Data for a Dataset Sufficient for Generating High-Resolution Weather Prediction Models.” Jared's mentor was Steve Ghan, Fundamental Science.

Elsevier: Ultrasonics Sonochemistry

SULI

- “Ultrasound-Assisted Hydrogenation of Cinnamaldehyde,” R.S. Disselkamp, T.R. Hart, A.M. Williams, J.F. White, C.H.F. Peden, accepted December 2003.

Check It Out!

To access the journals mentioned in this article, visit:

DOE Journal of Undergraduate Research.

<http://educationlink.labw orks.org/journal/>

Journal of Young Investigators

<http://www.jyi.org/>

Elsevier's journal Ultrasonics Sonochemistry

http://www.elsevier.com/wps/find/journaldescription.cws_home/525451/description#description

Do you have questions, comments, or suggestions for the newsletter?

Contact Karen Matz

ESL?

Is English your second, third, or fourth language? Would you like to improve your ability to speak English with confidence and clarity while having fun?

Join PNNL's new ESL/Toastmasters Club. We meet Wednesdays at noon. Contact Karen Matz for more information or visit <http://www.toastmasters.org/>

Phone numbers:

Karen Matz, 375-2075

Chris Espy, 375-2809

Accent Reduction Training Now Available

The Office of Fellowship Programs (OFP), in partnership with the Speech & Hearing Sciences Department at Washington State University (WSU) in Pullman, Washington, is offering an Accent Reduction Training as part of the enrichment program for PNNL's OFP participants. The facilitator is Assistant Professor Carla Jones, who is also the Clinic Director at WSU's Speech & Hearing Clinic. Registration and fees are through WSU, Pullman, and credit is given for successful completion of the course.

The course is designed for non-native English speakers who wish to modify their accents when speaking English or who wish to modify their English language pronunciation and intonation in order to improve how well they are understood. The course is also appropriate for native English speakers who wish to modify regional accents.

Professionals, scientists, businesspersons, and anyone whose major responsibility is to communicate with others will find this course especially helpful in improving oral fluency and speech intelligibility.

On March 3, eight individuals began the seven-week training on a pilot basis to be evaluated by students, instructor, and OFP staff. If successful, additional trainings will be offered to OFP participants and anyone who is interested. Currently there is a waiting list for the second session.

For additional information, contact Chris Espy, Chris.Espy@pnl.gov.

Upcoming Enrichment Activities for LTE's and Fellows

The Office of Fellowship Programs is planning a number of enrichment activities to add to the educational research experience for limited term employees (LTE's) and fellows who will be here for the summer. Based on input from mentors and educational appointees, we created this list of possible events for the year:

- Successful Proposals with the NIH (National Institutes of Health)
- Author Peter Fiske, Ph.D. author of "Put Your Science to Work: A Take-Charge Career Guide for Scientists"
- Careers in Academia
- Accent Reduction
- Assessments
 - Myers-Briggs Personality Type Indicator
 - Work Style
 - Values
- Giving Effective Presentations
- Job Search Skills (interviewing, resume writing, job sourcing)
- Selecting a Graduate School
- College to Professional Transition
- Professional Development in the Sciences – Panel of Senior Researchers
- Alternative Careers in the Sciences – Panel of Communications Professionals

For more information contact Chris Espy, Chris.Espy@pnl.gov.

TIPS
for Mentors and
Mentees:

Mentor tip: Ask what type of feedback and support your mentee would like to receive, for example: weekly meetings, response to journal writing, email updates.

Mentee tip: Keep a journal, daily is best, that you and your mentor can use to reflect on and evaluate your work.

"Most of the things worth doing in the world had been declared impossible before they were done."

-Louis D. Brandeis,
Supreme Court Justice,
1916-1939
Brandeis University in
Massachusetts is named
for him.



"Where a calculator has 19,000 vacuum tubes and weighs 30 tons, computers in the future may have only 1,000 vacuum tubes and perhaps only weigh 1.5 tons"

-Popular Mechanics,
March 1949

Mentoring Students: It's a Win-Win Proposition



Chris Espy, Program Manager,
Limited Term Employment Program

Communicating via E-mail - If your mentoring relationship relies on e-mail for communicating, here are some rules of etiquette you can use as guidelines in your virtual communication:

- Use descriptive subject headers that will identify the content of your message.
- Be cautious when using slang or idioms, especially if your mentoring partner is from a different culture and speaks a different native language.
- Let your mentoring partner know immediately when you receive a message and let him/her know you will reply as soon as you can.
- Remember that without voice and body language, much of your intended communication may be lost. Let your mentor/mentee know what you intended with explanations, like [sigh], or emoticons, like :-).

Dealing with Change - Change is unavoidable in life and in mentoring relationships. Your ability to manage and commit to change successfully is a critical competency. Change is not a problem to be solved; it is an environment you need to adapt to in your life.

Here are a few suggested best practices for dealing with and overcoming personal resistance to change:

- Use your support networks to help and advise you.
- Make and take the time to stay connected.
- Sort out fact, rumor and opinion in order to appropriately handle the change issue.
- Identify the reasons you are reluctant to commit to change.
- Identify the steps you need to take.
- Focus on those things you can control and let go of the others.
- Manage your stress.
- View change as an opportunity to grow and learn.

From *Triple Creek's Mentoring Newsletter*, January and February 2004,
Triple Creek Associates, Inc., Littleton, Co.

On The Job

Danielle is mainly responsible for providing analytical support to various projects within the Chemical and Biological Process Development group. She works with numerous analytical instruments but specializes in high pressure liquid chromatography. She also provides support by running reactions and assisting in experimental design.

Since being at PNNL, Eihab has contributed to four publications and was involved in a variety of economic analyses that contributed to the GridWise Alliance, a new public-private partnership focused on bringing together key stakeholders to support the Laboratory's vision for transforming the nation's energy system into a collaborative network.

Transitioning from LTE to PNNL Staff



Danielle Muzatko, LTE to Scientist I Chemical Biological & Processing Group

Danielle graduated from Eastern Washington University with a degree in Biology. Eight months later Danielle was promoted to a staff position from an LTE position. How did she do it?

Along with her attention to detail, hard work, and desire to really understand processes from start to finish, Danielle attributes her successful transition to her mentors: Andy Schmidt, Chief Engineer, and John Holladay, Senior Research Engineer. She said both Andy and John took a definite interest in her learning process and were able to identify where she could fit in the project in the longer term.

Danielle's advice to other appointees is to work hard and try to get exposed to as many different things as possible. This will help you get a feel for what opportunities are out there. For Danielle, it really helped her focus her career direction. "Of course funding is a critical issue, but if you show willingness to learn and build working relationships, it helps others see the contribution you can make," Danielle said. She also recommends appointees find a good mentor. Sometimes the person you are assigned to may not be best match.



Eihab Fathelrahman, LTE to Scientist II, Technology Planning and Deployment

While presenting a paper at the American Agriculture Economics Association, Eihab connected with representatives from PNNL and was hired as an LTE Post Doc working closely with Diana Shankle, Product Line Manager. Within just a few months, Eihab was moved to a regular staff position.

Originally from Sudan, Eihab received his undergraduate degree in Agricultural Economics from Assuit University in Egypt then traveled to Saudi Arabia to earn his Masters degree from King Saud University. He received his Ph.D. in Agricultural and Resource Economics from Colorado State University in March 2002.

Eihab attributes a number of things to his rapid success in transitioning from an LTE to a regular staff member. First, there was plenty of funding available for his projects. Second, Eihab believes there was a strong desire for him to succeed by his former manager, Diana Shankle, as well as Joseph Roop and Cody Hostick, two principal investigators involved in large projects. Finally, Eihab believes that his efforts to seek out long-term projects and work hard to prove himself as an essential member of team projects contributed to his success.

"Look at the appointment as an opportunity to show how you can contribute to the team," Eihab said. "It takes a significant amount of effort to make the transition so don't underestimate how hard it can be. The good news is that there appears to be a large number of staff who are willing to help if you ask for it, and that is one of the best ways to begin building a network inside and outside the Laboratory."

A Scientist?



Children as young as eight may be put off by the idea of becoming scientists because they see them as "middle-aged white males who never have fun", educationists say.

When asked to draw a scientist, children - from the age of eight or nine - were likely to draw a white male, with facial and/or eccentric hair, wearing glasses and a white jacket.

Boys never drew women and only very occasionally would a girl draw a female scientist. It was also rare for a black or Asian student to draw a black or Asian scientist.

This information is from BBC Education News, December 2000.

Newsletter Contributors:

- Elaine Daniels
- Chris Espy
- Jeff Estes
- Kathryn Lang
- Tim Ledbetter
- Ken Pepion
- Kelly Sullivan
- Karen Wieda
- David Spiel

Recruiting News



Anna Mitson, HR Specialist, works the recruitment booth.

10th Annual Institute for Teaching and Mentoring sponsored by the Compact for Faculty Diversity.

The Institute provided the opportunity to get the word out on research and educational opportunities available at PNNL to hundreds of minority doctoral students gathered at this annual event. The Office of University Relations and Fellowship Programs recruits fellows and limited term employees at conferences and meetings across the nation, ensuring a constant flow of talent into the PNNL employment pool. Events such as the Institute on Teaching and Mentoring also provide an opportunity for access to high quality students from groups underrepresented in the sciences, thereby contributing to the diversity goals of PNNL and the Department of Energy.

- From left to right:
Kyle Johnson (ORNL)
Johney Green (ORNL)
Wayne Martin (PNNL)
Natalie Peppers (BCO)
Eric Pierce (PNNL)
Elaine Daniels (PNNL)
Terrence Buck (BNL)



The 18th Annual Black Engineer of the Year Awards (BEYA)

The theme for this year's conference was, "Discovering Our Past, Exploring Our Future." Representing PNNL at Battelle's booth were Elaine Daniels, Wayne Martin, Eric Pierce and Novella Bridges.

This conference attracts professionals and students from every part of the nation and showcases outstanding contributions of blacks in the fields of engineering, technology, and science. Event opportunities included educational and instructive sessions on diversity, leadership, mentoring and personal development.

BEYA has helped fill the need for more positive role models in the black community and has given black students and professionals now in the field a place to meet and share. The conference's gala awards ceremony, networking activities, corporate-academic forums, community empowerment sessions, and other events were all designed to enrich our careers and in our spirits.