Paper/Work

LLNL Postdoc Association Newsletter
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Postdocs & Former Postdocs Work to Bridge the Gender Gap Through Outreach

By Heather Whitley

A recent report by St. Mary's College on the status of women and girls in California provides an interesting look into the representation and performance of women in science, technology, engineering, and math (STEM) across levels ranging from K-12 to the professional level (http://www.msmc.la.edu/status-of-women.asp.) The report shows that the performance of girls in STEM classes drops off significantly in high school, when students take algebra, geometry, chemistry, and physics classes. This discrepancy in performance translates to a gradual decrease in the number of women in STEM fields that continues into higher education and the workplace. In spite of the fact that women earn the majority of bachelor degrees awarded in California, they remain in the minority for degrees earned in the STEM fields, with the exception of biological sciences. In the workplace, women represent only 24% of those in computer, engineering, and science fields. According to the report, the gap is largest among engineers and architects: women constitute 46% of life and physical scientists, 16% of engineers and architects, and 24% of mathematical or computer occupations. Other sources give a more detailed look at the state of women in the workplace and in STEM fields:

- Only 10% of all civil engineers, 8% of all electrical and electronics engineers, and 10% of all aerospace engineers are female (U.S. Department of Labor, 2009).
- Women account for 53% of all biological scientists, 31% of all physicians and surgeons, 33% of all chemists and material scientists, and 29% of all environmental scientists and geoscientists (U.S. Department of Labor, 2009).
- Women constitute 46.5% of the workforce in the U.S., but hold just 25% of mathematical and computer science jobs and 11% of engineering jobs. Of the women in engineering professions, only 7% are Hispanic and 6% are African American (U.S. Department of Labor, 2008; National Science Foundation, 2007).

Bridging the Gender Gap Through Outreach, Continued

- In 2008, women held 57 percent of professional occupations in the U.S., but only 25 percent of professional information technology-related occupations were held by women (NCWIT, 2010).

The so-called "leaky pipeline" for women in the STEM fields is a complicated topic, which would quickly fill volumes. Many programs aimed at changing the trend have been instituted at the K-12 level in California schools. The goal of these programs is to initiate and foster interest in the STEM fields in young girls during the time of school when their performance tends to decline. These programs are primarily modeled on other STEM outreach programs which have contributed to raising interest among minorities and low income students, as well as increasing retention of minorities in the science fields (MESA, MBRS-RISE, etc.) The basic model is to couple fun activities to increase the exposure of students to the STEM fields and classroom activities to help them develop stronger study skills with positive mentoring in order to increase the students' overall confidence and interest in the STEM fields. While programs focused on the retention of women specifically are relatively new, data gathered over the last 30 years from programs more generally focused on minorities indicate that these programs do contribute to an increase in the number of students who complete a four year degree in STEM fields and in the percentage of those students who enter doctoral programs (See, for example, Journal of Education and Human Development vol. 2, no. 1, 2008.)

Recently, several LLNL employees had a chance to participate in community outreach through these programs. These events were focused on providing girls an opportunity to learn more about what people in STEM fields do in their jobs and to ask questions about the paths that lead to these jobs. We asked these employees to share a few words about their experiences.

"It was a wonderful experience for me to participate in the *GetSet Career Fair* at Granada High School on March 14, 2012. I am so happy to show my research and share my experience with pursuing a career in science. I am quite refreshed when these bright young students show a great amount of curiosity and interest in exploring technology, science, and engineering."
– Jing-Yin Chen, Condensed Matter and Materials Division (current postdoc)

Bridging the Gender Gap Through Outreach, Continued

"I took part in the NIF booth at the 2012 edition of "Expanding Your Horizons", a science and math career conference for 6th-9th grade girls. The event was held at the Diablo Valley College on February 25, 2012. As a woman doing sciences, it was a great pleasure for me to motivate young girls to do the same thing, and some of them were really interested about the whole process. The hard part of this exercise, as for any outreach activity, was to explain things in a non-technical and fun way, and I think in this case being interactive and enthusiastic is the key."
– Félicie Albert, NIF & Photon Science Applications (former postdoc)

"As someone who benefited from programs such as MESA at my high school and MBRS-RISE as a student at NMSU, I feel that community outreach is an important part of fostering the next generation of scientists. On March 14, I had the privilege of participating in a career fair for high school girls from across the Tri-Valley sponsored by GetSet (**G**irls **E**xploring **T**echnology, **S**cience, and **E**ngineering **T**ogether). It was truly a privilege to speak with so many bright young women who are excited about science and engineering fields, and was also a valuable experience in avoiding jargon when speaking about my research. At one point in the evening, a very excited sophomore came up to my table and exclaimed, 'A Bucky Ball, cool!' I had a molecular model of a Bucky Ball (C60) sitting on my table. I didn't even know what a Bucky Ball was at her age! Her enthusiasm was inspiring."
– Heather Whitley, AX Division (former postdoc)

Keep Focused with Tomatoes

The "Pomodoro Technique" breaks work into brief bursts of focused activity. Originally implemented using a pomodoro (tomato) kitchen timer, there are five basic steps to implementing the technique:

- decide on the task to be done
- set a timer to 25-29 minutes
- work on the task until the timer rings
- take a short break (1-5 minutes)
- every four "pomodoros" take a longer break

http://en.wikipedia.org/wiki/Pomodoro_Technique

Download my favorite pomodoro timer app:
www.focusboosterapp.com

—Nathan Kugland

Upcoming Events

Postdoc Karaoke Night
Details TBD; watch the email list for more info

Lightning Talks
Details TBD; watch the email list for more info

Physics & Life Sciences Postdoc Research Seminar
Tuesday, May 8, 11 AM
B151 R1209 (Stevenson Room). Refreshments served.
• Naomi Marks (CSD), "A Case Study in Nuclear Forensics (and a little bit about cosmochemistry)"
• Ben Jacobsen (CSD), "Probing Small Things to Answer Big Questions"

Stay up-to-date with the Postdoc email list:
https://ebb.llnl.gov/postdoc/email_list.lasso

Annual "Best Places to Work" Survey Results

Every year *The Scientist* magazine surveys postdocs to determine the best places to work, based on criteria such as pay & benefits, funding, facilities and infrastructure, training and mentoring, and career development opportunities. Mirroring the focus of *The Scientist* in general, the survey tends to focus on the life sciences. This year, Argonne National Lab is the only DOE laboratory to rank in the top 30 institutions.

Read the article:
http://the-scientist.com/2012/03/29/best-places-to-work-postdocs-2012/

Download the full report:
http://the-scientist.com/wordpress/wp-content/uploads/2012/03/04_12_BPTW_Postdocs.pdf

Comments/Suggestions/Praise/Complaints? Your Participation is Welcome!

Please send your comments or questions to the Editor (Nathan Kugland, kugland1@llnl.gov).

Selected Recent Research Publications by LLNL Postdocs

Bold = LLNL Postdoc. *Broadcast your achievements! Make new connections & help show how we are doing collectively.*
Guidelines: 1) Peer-reviewed publications only, nothing in progress; 2) Your affiliation must be LLNL; 3) Prepare a standard-format citation with all authors (no *et al*), the full title, and journal/proceedings info; 4) Note which authors are LLNL postdocs, and in what division & group; 5) Send all of this to Nathan (kugland1@llnl.gov).

Computation/CAR/CASC:

1. Steven Langer, **Abhinav Bhatele**, Todd Gamblin, Bert Still, Denise Hinkel, Mike Kumbera, Bruce Langdon, Ed Williams, "Simulating Laser-Plasma Interaction in Experiments at the National Ignition Facility on a Cray XE6," Cray User Group Meeting, Stuttgart, Germany, April 29-May 3, 2012. LLNL-PROC-547711

2. **Abhinav Bhatele**, Peer-Timo Bremer, Todd Gamblin, Martin Schulz, "Intuitive visualizations through multi-domain projections for performance analysis at scale," Exascale Research Conference, Portland, OR. April 16-18, 2012. LLNL-TR-537251

3. **Abhinav Bhatele**, Peer-Timo Bremer, Todd Gamblin, Martin Schulz, "PAVE: Intuitive visualizations for analyzing exascale workloads," Exascale Research Conference, Portland, OR. April 16-18, 2012. LLNL-MI-535518

PLS/Chemical Sciences Division/Energetic Materials/Characterization and Compatibility Group: **Kyle T. Sullivan**, Marcus A. Worsley, Joshua D. Kuntz, Alex E. Gash, "Electrophoretic deposition of binary energetic composites," Combustion and Flame, 159 (6), p. 2210, 2012.

PLS/Physics/Nuclear Theory and Modeling Group:

1. **Michael I. Buchoff**, "Finite isospin density probe for conformality," Phys. Rev. D 85, 074503 (2012) http://prd.aps.org/abstract/PRD/v85/i7/e074503

2. Thomas Appelquist, Ron Babich, Richard C. Brower, **Michael I. Buchoff**, Michael Cheng, Michael A. Clark, Saul D. Cohen, George T. Fleming, Joe Kiskis, Meifeng Lin, Ethan T. Neil, James C. Osborn, Claudio Rebbi, David Schaich, Sergey Syritsyn, Gennady Voronov, Pavlos Vranas, **Joseph Wasem** (LLNL Postdoc. Physics, Computational Nuclear Physics Group), "WW scattering parameters via psuedoscalar phase shifts," Phys. Rev. D 85, 074505 (2012) http://prd.aps.org/abstract/PRD/v85/i7/e074505

PLS/Physics/Optical Sciences Group:

1. **M. D. Schneider**, "Bayesian linking of geosynchronous orbital debris tracks as seen by the Large Synoptic Survey Telescope," Advances in Space Research, vol. 49, no. 4, pp. 655–666, Feb. 2012.

2. **M. D. Schneider**, R. H. Becker, W. De Vries, and R. L. White, "Foreground Predictions for the Cosmic Microwave Background Power Spectrum from Measurements of Faint Inverted Radio Sources at 5 GHz," The Astrophysical Journal, Vol. 750, 154, April 2012, http://dx.doi.org/10.1088/0004-637X/750/2/154.

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