From Curie to the ASU classroom: Celebrating Women in Physics

In 1987, Congress declared March as Women's History Month. The month-long designation serves to highlight contributions of women to events that have shaped history. There is a remarkable group of women who have made pioneering advances in physics over the last 100+ years. Among them:

- Marie Curie (1867-1934) was one of the first woman scientists to win worldwide fame and one of the greatest scientists of the 20th century. A two-time Nobel laureate (for Physics in 1903 and for Chemistry in 1911), Curie’s work changed understanding of energy and matter and helped drive science into a new era in medical research and treatment.

- Lise Meitner (1878-1968) helped to discover nuclear fission along with colleague Otto Hahn who received the Nobel Prize for their efforts. Meitner’s snub by the Nobel committee is frequently cited as an inexcusable oversight. Meitner was honored with the Enrico Fermi Award (1966), the Max Planck Medal (1949), and the rare distinction of having element 109 meitnerium named in her honor.

- Berta Karlik (1904-1990) and Ida Noddack (1896-1978) helped fill gaps in the periodic table and Noddack was among the first physicists to propose nuclear fission.

- Harriet Brooks, Fanny Gates, and Chen Shiung Wu were nuclear physicists from the early 20th century whose work contributed to our understanding of nuclear technology.

- Nobel laureate Rosalyn Yallow developed a radiation technique known as radioimmunoassay which revolutionized medical analysis.

On its website, the International Atomic Energy Agency makes the point that “Despite considerable progress made by women and girls in science and technology, studies today show that too many women still feel they learn and work in unfriendly or hostile environments and other technological workplaces.” See full text here. There are efforts underway to address these concerns at the national level and even through the United Nations.
molecules. The finding will have significant implementations for the energetics of photosynthesis and other biological energy transformations. Click HERE to see the cover and read about the related study.

ASU Physics Professor Timothy Newman was recently elected Member at Large for the Executive Committee of the American Physical Society Division of Biological Physics. The term is for three years 2008-2011. The position enables Newman to help steer the APS emphasis in biological physics and also emphasizes the growing national influence of the ASU biophysics effort.

ASU Physics will host the fourth annual Physics Undergraduate Research Symposium on Friday, April 25th. For more information on this event, please contact Sabrina Mathues at Sabrina.Mathues@asu.edu or call 480.965.9075

ASU Physics is proud to support the Physics and Astronomy Graduate Women’s Association (PAGWA). The group’s origin began informally a couple of years ago when female graduate students began sharing common concerns with Marcia Levitus, Professor of Chemistry and affiliate faculty in ASU Physics and the Center for Biological Physics.

Informal discussions eventually led to the creation of PAGWA which today has about 30 members who meet every other week.

The group provides a safe and open forum to discuss experiences and struggles female graduate students encounter regularly. Members have found the opportunity to discuss communication techniques, interview strategies, and work/life balance issues helpful and timely. Frequent guest speakers – both male and female – address a variety topics and meetings are open to all regardless of gender.

Accordingly to Levitus, the group’s discussions have “actually triggered many interesting conversations with some of the male professors in the department, including the Chair of Physics – Robert Nemanich – who is extremely supportive (of PAGWA)”.

When asked about the statistics on women in science, Levitus and PAGWA student member Ashley Kibel agree that progress is underway – particularly in biology and chemistry. Physics is moving much slower and Levitus and Kibel both cite the perception that women are not good at math as perhaps one reason why women do not pursue degrees in physics.

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Women in Physics...

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Levitus shares an interesting story relating to these skewed perceptions.

“My very first reality check was when I moved to the US as a postdoc. I never experienced anything serious, but there are tons of small things that I would clearly identify as gender-related. For example, when I was a postdoc in Berkeley I invited a couple of lab mates for dinner at home. One of my male lab mates was checking...”

From the Chair

The Science Partnerships and Stunning Research Advances

In what has become an annual event, the American Association for the Advancement of Science organize visits to the offices of many congressional leaders. I was part of the delegation of the Materials Research Society and was able to visit the Washington offices of Senator Jon Kyl and Congressman Ed Pastor...
some books on a desk and said something like 'I see that your husband likes computer programming'. The guy clearly assumed that those books could not possibly be mine, even (though) he knew that my work was computationally intensive.

"It turns out that my husband has a long list of wonderful qualities, but computer programming is clearly not one of his skills. We still laugh about the anecdote. This is (on the surface) not serious, but it is that same type of reasoning was often used to assume that the females in the lab could not do serious data analysis and some guy was consulted instead. This and other stereotypes are so deeply embedded in all of us that they end up hurting female scientists in the more math and computationally demanding fields even when no conscious discrimination is intended."

Kibel believes the low percentage of women in physics may have a domino effect.

“A lot of women identify with the feeling of isolation that can exist as a woman in a field dominated by men. It is not out of the ordinary to be one of the only - potentially THE only - female in a graduate-level physics class. I think that, sometimes, this is very intimidating. Furthermore, since there are so few women in faculty positions, it is hard to find a role model who is a good example of a woman who has achieved a successful career in physics” says Kibel. “It’s harder to convince yourself that you can have a successful career when you rarely see women in positions ahead of you.”

However, Levitus and Kibel and many other members of PAGWA advise girls and women to continue pursuing science as a career.

“If you have an interest in science,” Kibel states “don’t let anyone else tell you that it’s too hard or that you can’t do it.”

Levitus echoes “Look for supporting people around you...A career in science this March.

Senator Kyl plays a key role on the Senate Finance Committee, and Congressman Pastor is on the House Appropriations Committee and three related important subcommittees.

I visited both offices last year, and it was a pleasure to continue our discussions about the partnership of science and technology research and education and the funding support supplied by the US government.

In Senator Kyl’s office our group met with Legislative Counsel Abby Donovan and Correspondent George Fleeson and the discussion focused on the tremendous growth of science and technology-related companies in Arizona and how their current and future successes relate to advances in science research. Much of this research has been funded through agencies such as the National Science Foundation, the Department of Energy, the National Institute of Standards and Technology, the National Aeronautics and Space Association, and the Department of Defense.

Counsel Donovan was well aware of the importance of science research and education and was planning a visit to ASU on her next trip to Arizona. The MRS delegation recognized Senator Kyl’s support of the America Competes Act which was signed into law in 2007.

In Congressman Pastor’s office, we met with Senior Legislative Assistant Richard Patrick. I had met with Richard last year, and I again enjoyed the opportunity to advance our discussion. With the growth of ASU’s downtown campus which is in the Congressman’s district, this was an even more focused discussion. Our conversation explored the impact of both science education and research particularly centered on the new health and technology focus of the district.

We appreciated the Congressman’s support of the America Competes Act, and we all acknowledged the complexities in advancing the programs through the parallel appropriations bills.

The other component of the partnership was particularly evident at two recent meetings - the March Meeting of the American Physics Society and the Spring Meeting of the Materials Research Society. At the APS meeting, there was tremendous excitement toward the potential of using a single atomic layer of graphite (termed graphene) in future electronics.

At the MRS meeting, many new materials were discussed which could address a wide range of energy applications. I was struck by the enthusiasm, accomplishments and expertise of the many student researchers. They clearly showed that the public support of science will continue to impact our society.

Robert J. Nemanich, Professor & Chair
ASU Physics

ASU announces Nanoscience degree
can be a lot of fun and extremely rewarding, so do what you want to do with passion and do not think that your gender will be an issue, because it doesn’t need to be.”

ASU Physics recognizes the important contribution women have made and continue to make in the sciences. We honor their achievements this and every month through concentrated efforts to recruit and retain female physics students both at the undergraduate and graduate level. Furthermore, ASU Physics takes seriously the opportunity to position itself as an institution where high-caliber female scientists choose to work.

*For more information on Marcia Levitus, please visit [http://phy.asu.edu/faculty.php?name=mlevitus&sort=alpha](http://phy.asu.edu/faculty.php?name=mlevitus&sort=alpha).*

*For information on PAGWA, contact Ashley.Kibel@asu.edu.*

**CONGRATULATIONS**

to ASU Physics' postdoc Dong Su and his wife Jing Cheng who welcomed their son - little **Yuming Su** - on March 10, 2008!

**New graduate program offers options for science professionals and students**

The Department of Physics in conjunction with the Department of Chemistry and Biochemistry announces the establishment of the Professional Science Masters (PSM) in Nanoscience degree program.

The Arizona Board of Regents approved the PSM in Nanoscience degree program in January 2008.

Arizona State University is one of several institutions offering Professional Science Masters (PSM) degrees, but the only university to have a program specifically in nanoscience.

The two-year PSM degree which launches in Fall 2008 is an innovative approach to meeting the growing needs of industry by training students and working professionals in areas vital to career growth: math, science, business, engineering and technology. PSM graduate students will take classes as well as complete internship projects at private businesses or government agencies.

John Venables, ASU Physics Professor and a driving force behind the development of the new program, stresses that nanoscience is already tremendous strength at ASU. "Recent reorganizations at ASU are going a long way towards creating an environment that is very supportive of [interdisciplinary] programs and ‘departments without walls,’” he said. Venables point to the number of industry partners in Arizona, adding that the PSM will bring global attention to the research efforts in the Valley of the Sun.

ASU has more than 40 tenured and tenure track faculty researching and teaching in this dynamic area, and in several national and internationally recognized research institutes and facilities.

Three of the planned areas of concentration for students in the PSM program will be Nano-Materials and Nanoelectronics, Biophysics and Bionanotechnology, and Biophysics, Biochemistry and Sensors. The interdisciplinary program will be based in the Department of Physics with courses also offered through ASU’s Department of Chemistry and Biochemistry, the Ira A. Fulton School of Engineering, and the ASU School of Life Sciences.

*For more information about the PSM degree and other offerings, visit [http://physics.asu.edu/graduate/prof_degrees.php](http://physics.asu.edu/graduate/prof_degrees.php) or contact Eboni Anderson, ASU Physics Graduate Coordinator at (480) 965-9152.*

**Keep in touch and make a difference with ASU Physics!**
