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# *Summary of Chemistry and Physics Gender Equity Workshops & Planning for a Related Workshop*

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# Snapshot of Chemistry in 2005

- 10,000 bachelors/year; 50% female (2005)
- 2,000 Ph.D.'s/year; 35% female (2005)
- "Top 50" are the academic leadership:
  - >50% of faculty at "top 50" chemistry depts. earned Ph.D. at "top 10" chemistry dept. (2001)
  - Women are 13% of top 50 faculty (2005)
  - URM are 3% of top 50 faculty (2003)
  - 7 URM women faculty at top 50, out of 1,633 (2005)

**CHEMICAL**  
& Engineering News

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**WOMEN IN ACADEMIA**  
Among the top 50 universities, Rutgers has the greatest share of women chemistry professors

	FULL PROFESSOR			ASSOCIATE PROFESSOR			ASSISTANT PROFESSOR			ALL FACULTY		
	TOTAL	WOMEN	%	TOTAL	WOMEN	%	TOTAL	WOMEN	%	TOTAL	WOMEN	%
Akron, U of	11	2	18%									
Arizona, U of	22	5	23	3	0	0%	4	0	0%	18	2	11%
Arizona State U <sup>a</sup>	23	2	9	8	0	0	6	1	17	32	6	19
California, U of, Berkeley	34	4	12	5	1	13	11	4	36	42	7	17
California, U of, Irvine	23	1	4	2	0	0	9	0	0	48	5	10
California, U of, Los Angeles <sup>b</sup>	27	5	19	7	2	29	8	3	38	33	4	12
California, U of, San Diego <sup>c</sup>	30	5	17	5	0	0	7	3	43	41	10	24
California, U of, San Francisco <sup>b</sup>	12	0	0	2	1	50	15	1	7	50	6	12
California Inst. of Technology	20	2	10	2	0	0	5	1	20	19	2	11
Colorado, U of <sup>a</sup>	22	4	18	6	1	17	4	2	50	26	4	15
Cornell U <sup>c</sup>	23	2	9	3	0	0	9	1	11	37	6	16
Delaware, U of	16	1	6	8	2	25	6	0	0	32	2	6
Emory U	15	0	0	1	0	0	8	2	25	32	5	16
Florida, U of	24	1	4	11	3	27	8	2	25	21	1	5
Florida State U <sup>a</sup>	16	2	13	9	2	22	11	2	18	43	6	14
Georgia Inst. of Technology <sup>a</sup>	22	1	5	8	0	0	1	0	0	38	1	3
Harvard U <sup>c</sup>	19	1	5	1	1	100	8	0	0	21	2	10
Illinois, U of, Urbana-Champaign	31	3	10	2	0	0	7	2	29	40	5	13
Indiana U	17	0	0	6	2	33	8	0	0	31	2	7
Johns Hopkins U	15	0	0	1	0	0	4	2	50	20	2	10
Louisiana State U	15	0	0	9	2	22	6	2	33	30	4	13
Maryland, U of, College Park <sup>a</sup>	25	5	20	7	0	0	8	1	13	40	6	15
Massachusetts, U of, Amherst	9	0	0	7	2	29	5	1	20	21	3	14
Massachusetts Inst. of Technology	21	3	14	4	1	25	5	2	40	30	6	20
Michigan, U of	21	1	5	5	1	20	11	3	27	37	5	14
Michigan State U	20	2	10	10	1	10	4	0	0	34	3	9
Minnesota, U of	25	2	8	6	1	17	8	2	25	39	5	13
North Carolina, U of, Chapel Hill	24	2	8	12	4	33	2	0	0	38	6	16
Northwestern U	20	1	5	2	1	50	3	1	33	25	3	12
Notre Dame, U of <sup>a</sup>	12	0	0	4	1	25	7	2	29	23	3	13
Ohio State U	20	3	15	7	1	14	6	0	0	33	4	12
Oklahoma, U of <sup>a</sup>	14	0	0	5	2	40	7	2	29	26	4	15
Pennsylvania, U of	26	2	8	6	1	17	4	1	25	36	4	11
Pennsylvania State U	18	2	11	6	1	17	5	3	60	29	6	21
Pittsburgh, U of	11	0	0	8	2	25	7	1	14	26	3	12
Princeton U	18	0	0	2	2	100	4	0	0	24	2	8
Purdue U	36	3	8	9	4	44	8	3	38	53	10	19
Rice U	15	1	7	0	0	nm	5	1	20	20	2	10
Rutgers U <sup>c</sup>	29	6	21	7	4	57	3	0	0	39	10	26
South Carolina, U of <sup>a</sup>	17	1	6	3	1	33	10	2	20	30	4	13
Southern California, U of	18	1	6	6	1	17	4	1	25	28	3	11
Stanford U	15	1	7	4	0	0	3	1	33	22	2	9
State U of New York, Buffalo	23	1	4	3	0	0	7	2	29	33	3	9
State U of New York, Stony Brook	19	2	11	5	2	40	2	0	0	26	4	15
Texas, U of, Austin <sup>a</sup>	31	1	3	6	1	17	9	2	22	46	4	9
Texas A&M U	35	3	9	5	1	20	6	1	17	46	5	11
Utah, U of	21	2	10	3	0	0	7	2	29	31	4	13
Virginia Polytechnic Inst. & State U	15	2	13	13	2	15	2	0	0	30	4	13
Washington, U of	30	2	7	4	1	25	5	0	0	39	3	8
Wisconsin, U of, Madison	27	2	7	2	0	0	10	2	20	39	4	10
<b>TOTAL</b>	<b>1,052</b>	<b>92</b>	<b>9%</b>	<b>264</b>	<b>56</b>	<b>21%</b>	<b>317</b>	<b>65</b>	<b>21%</b>	<b>1,633</b>	<b>213</b>	<b>13%</b>

NOTE: Appointments as of 2005-06 academic year. <sup>a</sup> Chemistry and biochemistry. <sup>b</sup> Pharmaceutical chemistry. <sup>c</sup> Chemistry and chemical biology. nm = not meaningful.

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## *Building Strong Academic Chemistry Departments Through Gender Equity, January 29-31, 2006*

- Cosponsored by NSF, DOE, and NIH
  - Major funders of chemistry research
- Chairs:
  - Dr. Cynthia Friend, Harvard University
  - Dr. Kendall Houk, University of California Los Angeles
- Steering Committee:
  - Dr. Kristin Bowman-James, University of Kansas
  - Dr. Charles Harris, University of California-Berkeley
  - Dr. Geraldine Richmond, University of Oregon, COACH (Committee on the Advancement of Women Chemists)
  - Dr. Robert Silbery, Massachusetts Institute of Technology
  - Dr. Isiah Warner, Louisiana State University
- Federal Advisors:
  - Dr. Arthur Ellis, NSF MPS Chemistry Division
  - Dr. Michael Rogers, NIH NIGMS Pharmacology, Physiology, & Biological Chemistry Division
  - Dr. Walter Stevens, DOE BES Chemical Sciences, Geosciences, and Biosciences Division



**Goals:** to develop and implement strategies to significantly increase the number of women chemists in tenured academic positions in our research universities and eliminate the gender biases that negatively impact their career progress.



# NSF, DOE, NIH Sponsored Workshop:

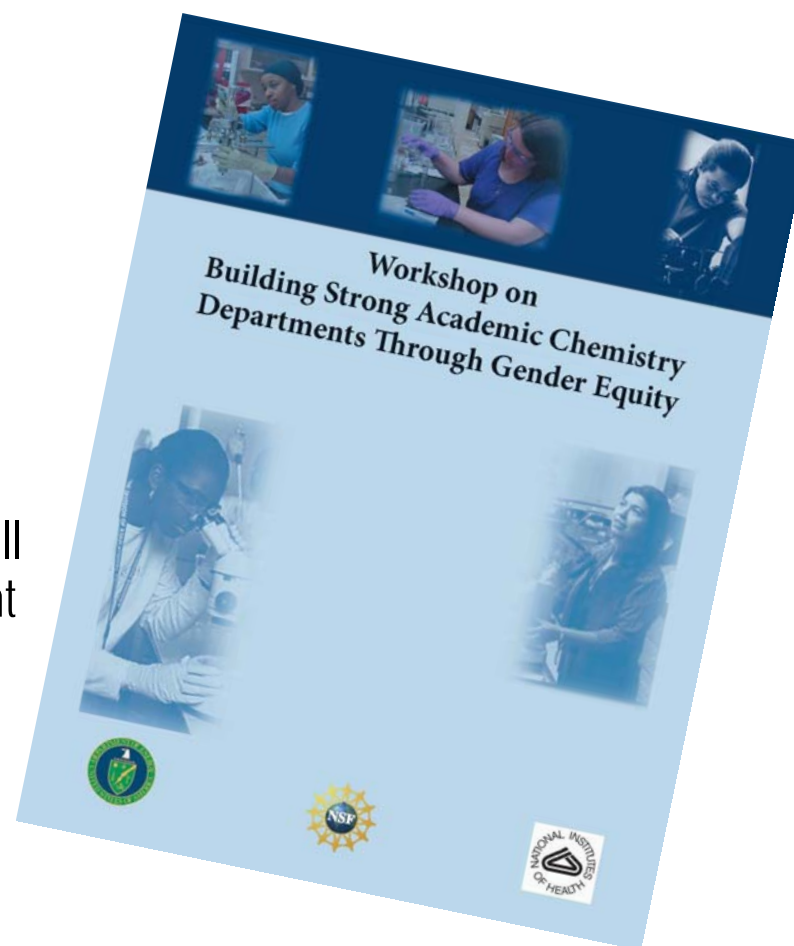
Building Strong Academic Chemistry Departments through Gender Equity

- 56 Department Chairs from top Chemistry Departments
- ~30 University Leaders, Funding Agency Leaders & Speakers/Panelists
- Data-driven presentations by social scientists & academic leaders
- Interactive skit by University of Michigan Center for Research on Learning and Teaching (CRLT) Players
- Implicit bias; Title IX; Sen. Wyden
- NSF/NIH/DOE funding & senior mgmt. presence
- Panels and break-out sessions developed action items for institutions, departments, and funding agencies
- Chairs committed to action items at the workshop
- Chairs answered pre- and post-survey questions
- Chairs returned to their departments, armed with knowledge of the practices necessary to change the cultures of their chemistry departments and to move rapidly toward gender equity, aided by federal programs and policies.

## *Action Items Were Developed for Departments, Institutions, and Funding Agencies*

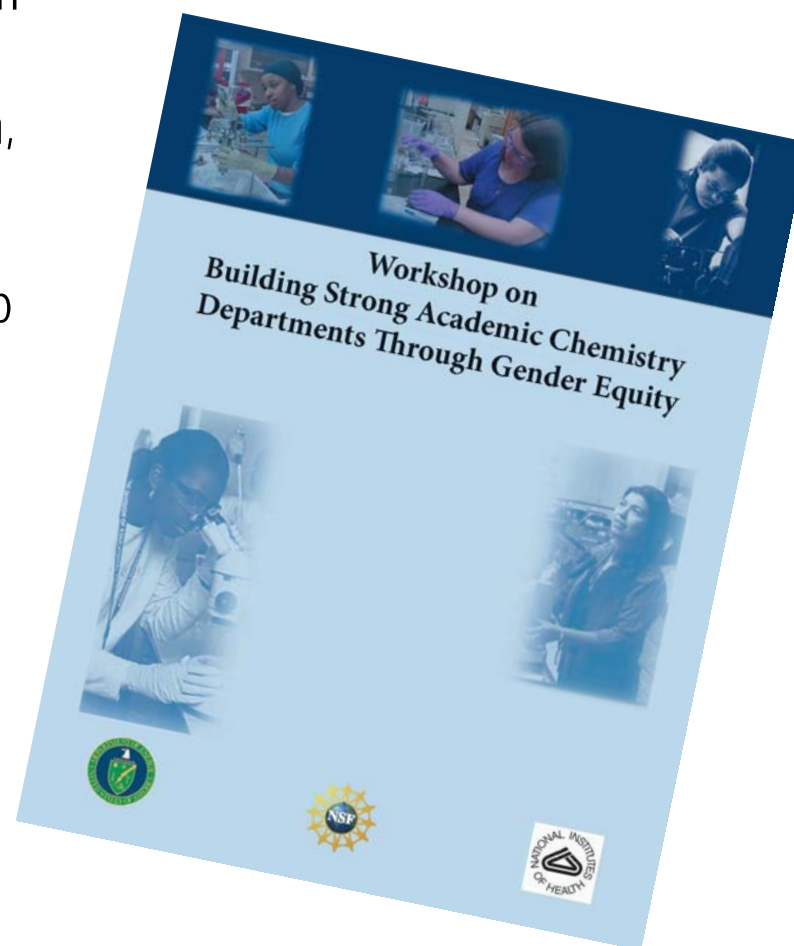
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1. Double the percentage of women applicants in the applicant pool in the next year.
2. Establish effective mechanisms for assisting career development of young faculty, especially women.
3. Consider personal obligations in academic scheduling and planning.
4. Develop and implement programs that educate all faculty members and students in your department regarding the accumulation of disadvantage of women.



## *Action Items Were Developed for Departments, Institutions, and Funding Agencies*

1. Make diversity an academic priority and develop programs that enhance recruitment and retention of faculty.
2. Develop policies to facilitate the hiring of women, including facilitating spousal hiring.
3. Assure that mid- and senior-level faculty, especially women, are participating in leadership roles.
4. Recognize the importance of and advocate for institutional support of child care.
5. Ensure that promotion and tenure policies are compatible with the needs of candidates who have families.
6. Ensure that the spirit and letter of Title IX are followed in your university.

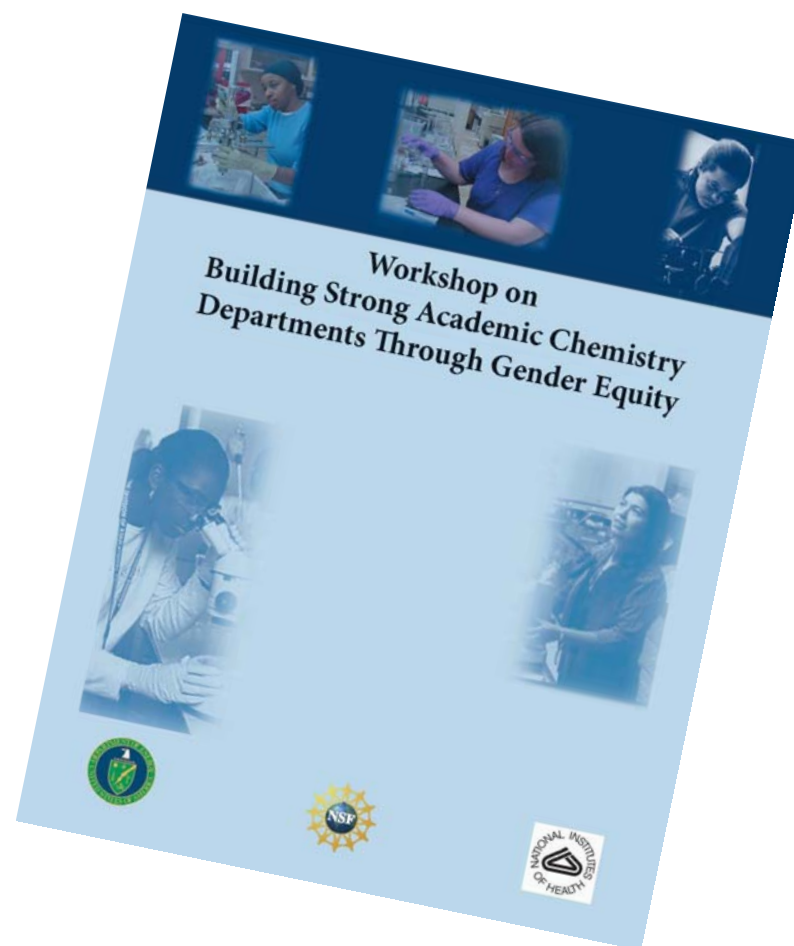


## *Action Items Were Developed for Departments, Institutions, and Funding Agencies*

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Develop policies to ensure gender equity in proposal review through:

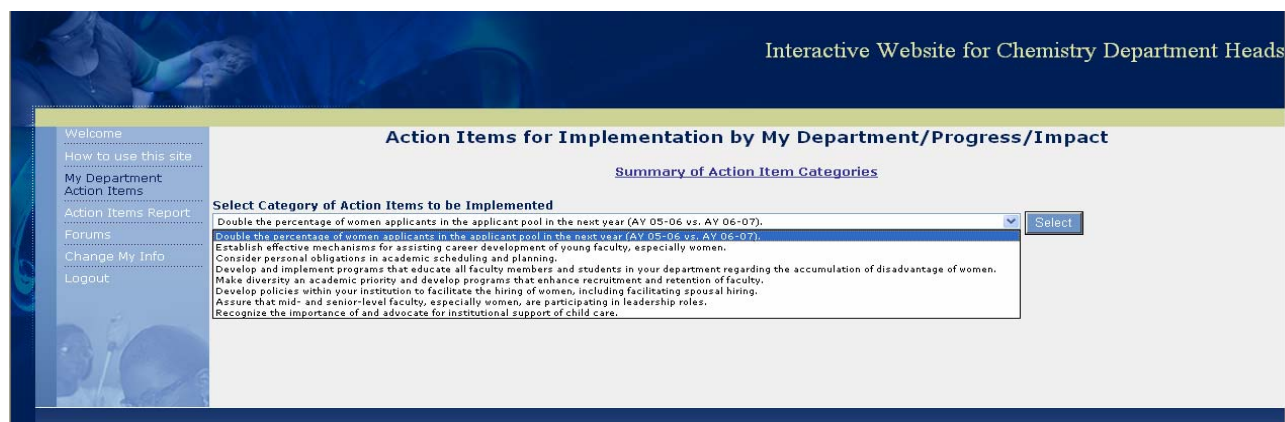
1. Instituting procedures for training of reviewers and grantees on diversity issues.
2. Modifications of peer review processes where necessary to ensure gender equity.
3. Securing Title IX compliance by accumulating data and tracking, as in NSF's ADVANCE programs, including surveys of lab space and resources.
4. Fostering gender equity in highly visible Federal programs such as national labs, large research centers, and prestigious awards.



## *As a Follow Up, Each Chair was Asked to Select 2 Action Items on an Interactive Website and Report Progress*

45/56 responses on Follow-up COACH Website.

- Establish effective mechanisms for assisting career development of young faculty, especially women. (n=26)
- Double the percentage of women applicants in the pool. (n=22)
- Assure that mid- and senior-level women faculty are in leadership roles. (n=21)
- Develop policies to facilitate the hiring of women, including spousal hiring. (n=15)
- Make diversity an academic priority and develop programs that enhance recruitment and retention of faculty. (n=13)
- Consider personal obligations in academic scheduling and planning. (n=10)
- Educate faculty members in your department regarding the accumulation of disadvantage that impact women faculty. (n=10)





## *The Chemistry Gender Equity Workshop Produced Measurable Attitude Shifts*

### *COACH Pre- and Post-Surveys of the Chairs*

**BEFORE THE WORKSHOP:** Principle factors limiting Chairs' ability to hire women were beyond their control, e.g., too few applicants, losing candidates to other departments, spousal hires.

**AFTER THE WORKSHOP:** More likely to report limiting factors were within their control, e.g., departmental faculty not committed to or opposed hiring women, didn't have enough financing.

### *Chairs' perception of factors that slow the progress of women chemistry faculty changed for 9 of the 11 sampled barriers including:*

- Few available mentors.
- Inability to recruit best graduate students.
- Lack of success in securing funding.
- Subtle biases against women.
- Unwelcoming departmental climate.
- Discrimination in peer review process.
- Heavier service/teaching load.
- Women do less self-promotion.
- Women excluded from important departmental decisions.

*Results have been submitted by Greene, Lewis, Richmond, and Stockard for publication in the social science literature.*

## *Gender Equity: Strengthening the Physics Enterprise in Universities and National Laboratories, May 6-8, 2007*

- Cosponsored by NSF and DOE
  - DOE Basic Energy Sciences, Advanced Scientific Computing Research, Fusion Energy Sciences, High Energy Physics, and Nuclear Physics
  - NSF Physics, Materials Research, and Mathematical and Physical Sciences Office of Multidisciplinary Activities
- Hosted by American Physical Society Committee on the Status of Women in Physics (CSWP)
- Chairs:
  - Dr. Nora Berrah, Western Michigan University (CSWP Chair)
  - Dr. Arthur Bienenstock, Stanford University (APS President Elect)
- Steering Committee:
  - Dr. Kimberly Budil, Lawrence Livermore National Laboratory
  - Dr. Catherine Fiore, Massachusetts Institute of Technology
  - Dr. Judy Franz, American Physical Society
  - Dr. Theodore Hodapp, American Physical Society
  - Dr. Mary Ann Mason, University of California Berkeley
  - Ms. Sue Otwell, American Physical Society
  - Dr. Patricia Rankin, University of Colorado
  - Dr. Meg Urry, Yale University
  - Dr. Sherry Yennello, Texas A & M University
- Federal Advisors:
  - Dr. Joseph Dehmer, NSF MPS Physics Division
  - Dr. W. Lance Haworth, NSF MPS Materials Research Division
  - Dr. Eric Rohlifing, DOE BES Chemical Sciences, Geosciences, & Biosciences Division
  - Dr. G. Wayne van Citters, NSF MPS Astronomical Sciences Division



**Goals: to examine the underlying causes for the scarcity of women in physics and to formulate specific recommendations for action to improve the recruitment, retention, and promotion of women in physics.**

## *The Physics Gender Equity Workshop Followed the Chemistry Workshop Model With a Few Changes*

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- Involved social scientists and physical scientists focusing on data
- CRLT Players interactive skit, speakers, panels, and breakout sessions
- Attendees
  - 50 Physics Department Chairs from major universities
  - 14 national laboratory managers or laboratory distinguished scientists
    - One each from 10 SC labs; one each from 3 NNSA labs
    - BES-, NP-, HEP-, FES-, ASCR-, BER-, & NNSA-funded lab managers present
  - Speakers, panelists, funding agency representatives, and physics opinion shapers
- Topics included American Competitiveness Initiative, *Beyond Bias and Barriers*, Title IX, National Labs
- Unique components (relative to Chemistry workshop)
  - inclusion of **national laboratories** in the target audience
  - session on improving the climate for **students** in the pipeline
  - More structured breakout groups
- Engaged top physics leaders in identifying ways to increase, retain and promote women in physics



# Initial Feedback on the Physics Gender Equity Workshop Has Been Positive

- Exposed a new audience to the social science of gender equity
- Possibly created *agents of change* to disseminate results
- Drafted recommendations for universities & national labs and for funding agencies
- Attendees committed to implement 2 action items
  - APS will follow up with a web based inquiry
- Pre- and Post-surveys administered by COACH
  - Results are currently being analyzed
- Press coverage - National Public Radio, Nature, Nature Physics, Physics Today, APS News
- A final report is being written, expected Fall 2007

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Our Siberian Correspondent  
International News on page 4





Alice Agogito of UC Berkeley addresses the opening session of the Gender Equity conference. (See story on the right.) There were 127 attendees at the conference, of whom 72 were male and 55 were female—closer to gender equality than in the larger physics community.

### Gender Equity: No Silver Bullet but Lots of Ways to Help

Chairs of about 50 major research-oriented physics departments in the United States and managers of about 15 physics-related national laboratories met at the American Center for Physics May 6-8 for a conference entitled "Gender Equity: Strengthening the Physics Enterprise in Universities and National Laboratories."

The goal of the meeting, according to conference co-chair Nora Berrah of Western Michigan University, was to find ways to double the number of women in physics over the next 15 years. The gender equity conference was organized by APS with support from NSF and DOE.

Women now make up about 13% of physics faculty, but only 7.9% at top 50 research-oriented universities. Berrah pointed out that chemistry and astronomy have twice the percentage of women that physics has. "The gender gap is a serious concern. We should be talking advantage of the pool of talent," she said.

In the opening session, workshop co-chair Artur Bienstock of Stanford University said that given the current US demographics and increasing competition from other countries in science and technology, we need to increase the proportion of the US workforce engaged in science and technology. To do this, we must recruit more women to scientific careers. "If we fail to increase the participation of women we will see a steady decline in the fraction of the workforce in science and technology," he said.

EQUITY continued on page 7

APS News, June 2007

nature  
physics

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EDITORIAL

## Take the lead

It's an old issue — how do we tackle the under-representation of women at all career levels in physics research — but are there any new answers?

Last month, a workshop entitled *Gender Equity: Strengthening the Physics Enterprise in Universities and National Laboratories* took place at the headquarters of the American Physical Society in Maryland, with the stated aim of facilitating a doubling of the number of women in physics over the next 15 years. The under-representation of women in research careers in physics is proving a tough nut to crack. Why would this workshop, ahead of many other well-meaning efforts, come any closer to a solution?

What was remarkable about the Maryland workshop was its participants: chairs from 50 major physics departments across the USA, 14 division directors of national laboratories units, and leaders from the National Science Foundation and the Department of Energy. After all, if there is to be change, it has to come from the top.

In the list of preliminary recommendations from the workshop, many begin with the words "leaders should". Leaders should "set a code of conduct", "make expectations clear", "be aware of subtle biases" and so on. Many of these recommendations are easily recognizable as good management practice. A good manager creates the appropriate atmosphere in which all team members can thrive, each being encouraged to play to their strengths, and, through their collective effort, carry the interests of the team forwards. That picture doesn't necessarily describe the average physics research group — although it probably should.

Times are changing. Team work and collaboration are increasingly prevalent in research, and demand wider skills of even the most brilliant of physicists. This move away from "the more traditional, competitive scientific culture" — as recognized in *The Pisa/duena Recommendations on Gender Equality in Astronomy* of 2003 — is likely to benefit women in research, as is increased emphasis on effective mentoring.

**If there is to be change, it has to come from the top.**

The single biggest issue to face, of course, is that of children. The playing field will never be level on this score, but women should not be faced with the choice of having either children or a scientific career: men have both, why shouldn't women? The Maryland workshop has made specific "Recommendations to Funding Agencies" on this issue. These include that the eligibility window for post-doctoral researchers to apply for young investigator or start-up grants be extended by the amount of time that the researcher has taken off for child-rearing; and that maternity leave be noted in the annual report for a grant, so that the absence may be taken into account in judging progress and renewal of the funding. Unfortunately the recommendations fall short on one vital issue: although noting that maternity or family leave may "adversely affect the

research of the advisor", this ball is simply thrown into the court of the funding agencies, suggesting they "develop methods of addressing the issue".

Extensions and allowances are all very well. For all that there might be some move away from outright competition at the level of the individual towards cooperative teamwork, in the community at large the competition that has always driven research forwards will be there still. Your competitors on the other side of the world won't be making allowance for the slower progress of research in your group due to family-related absences. There is a need, therefore, to keep firmly in sight exactly how science works.

Because times have changed. The typical motivation stated now for improving women's representation in science is not that it is a matter of rights, or a feel-good notion, but a reason of economic necessity. In a changing world, the competitiveness of a nation has come to the fore, and there is a need to draw on, as the Maryland recommendations state, "the entire available pool of talent".

The solution to how to do that isn't quite there yet. But the efforts of the Maryland workshop, and the reasoned language of its report, give cause to hope. And it is heartening that one point, often made in such reports but usually buried, is spelled out in the opening section: that the benefits of working in a truly diverse research community would be felt by women and men.

## Workshop aims to double number of women in physics

"When someone says 'physicist,' you see Albert Einstein, not one of us [women]," says Meg Urry, an astronomy professor at Yale University. "When our colleagues are hiring, we all have a picture of someone like Artie

Physics Today, July 2007

Nature Physics,  
Vol. 3 p. 363,  
June 2007

## *Draft Recommendations – Examples from Breakout Reports (Not Inclusive)*

### *Departments and Institutions*

- Make hiring, retaining, and promoting women in physics a priority
- Decide on hiring criteria ahead of time
- Celebrate successes uniformly
- Provide primary care giver accommodations for graduate students, post-docs
- Be aware of subtle biases
- Take advantage of two-body opportunities (dual career couples)
- Consider sick child care/emergency care
- Teach Chairs how to facilitate meetings
- Protect junior faculty members from politics

### *Funding Agencies*

- Embed diversity in all decision-making levels
- Collect demographic data
- Sponsor grant writing workshops for early career faculty
- Train reviewers on diversity – e.g., how to handle a career interruption in a C.V.
- Involve women in the review process
- Increase postdoctoral awards with mentoring opportunities
- Allow grant extensions for parenting time off
- Encourage the availability of child care during conferences

# Issues of Groups Underrepresented in Science are Related

## Beyond the glass ceiling

Women and under-represented minorities are earning historically high numbers of science doctorates in the United States. So why aren't they making it to the professorial ranks? Kendall Powell investigates.



T. HEDWITZ/CORBIS

**A**aron Velasco describes himself as the only US-born Latino seismologist in the country. As a faculty member at the University of Texas, El Paso, he is part of a rare group of under-represented minorities who make it into tenure-track academic positions in the United States. His story illustrates part of the reason for the abysmally low numbers of others like him.

"I honestly could not afford to become a postdoctoral fellow," says Velasco, recalling how the enormous debt he had built up during almost ten years of studying beyond high school forced him to seek something better than a postdoc's salary. In search of financial security, Velasco went straight into industry after graduate school, then found his way back to academia. Many other excellent minority graduates cite economic disadvantage as a major reason for why they don't end up in academic positions — even though the number of minority PhDs is on the rise.

If academia is to offer varied role models and perspectives for a diverse population of students, it must become more welcoming to women and ethnic minorities, leaders of diversity efforts say. Industry has already learned the value of diversity. In a 2003 amicus brief in support of the University of Michigan's affirmative-action admissions policies, 65 Fortune 500 firms argued that efforts to increase diversity improve innovation, productivity and global competition.

Women and minorities suffer from the effects of isolation once they enter the upper ranks of academia. Both groups perceive academia as an unfriendly environment, and both suffer from an implicit bias against them in the hiring process.



"I honestly could not afford to become a postdoctoral fellow."  
— Aaron Velasco

For women, the clash of their biological clock with the tenure clock, along with the effort of balancing work and family duties, is a huge barrier to advancing up the academic ladder. For minorities, financial and geographical constraints make academia a less attractive choice than industry. Attempts to remove barriers and to mend holes in the pipeline have met with mixed success.

### Leaving academia

In 2003, 51% of the US population was female and more than 25% of the population was from a minority group under-represented in science: African Americans, Latinos and Native Americans. Women earned well over one-third of the science and engineering doctorates awarded in 2003–04 and African American and Latino doctorates have steadily increased during the past ten years (see Tables 1 and 2).

But women hold fewer than one-third of all science and engineering faculty posts, and just 18% of full professorships. For minorities, the numbers are below 10% and 6.7%, respectively. When the numbers are dissected at the disciplinary level, many fields find they are doing far worse in hiring talented women and minorities than should be expected, given the numbers of doctorates they award to those groups (see Table 3). Although many 'diversity in science' programmes have been in place for more than 30 years, the faculty in most US academic science departments has remained overwhelmingly white and male.

The numbers show that not only are women having a hard time reaching parity in the hiring process, but that they continue to struggle for parity at all levels of success such as making tenure, advancing to

administrative positions, and gaining national recognition for scientific achievements. These numbers also send a striking message to the next generation.

"I think young women looking at the PhD-to-faculty transition are being more pragmatic, looking down the road and saying, 'I don't want to beat my head against a wall for the next 20 years,'" says Donna Dean, president of the Association for Women in Science (AWIS) in Washington DC. The AWIS began in 1971 to help women succeed at the mid-career stage. Dean says the focus has shifted to earlier stages, to recognize that women fight an uphill battle from the minute they earn their doctorates.

Women and minorities must both deal with implicit bias, a problem that is well-documented in the social-science literature, but one that has garnered little attention from the science sector until recently. Dean describes the problem of implicit bias in these terms: "People are most comfortable with people who think and look like themselves."

This type of bias cuts across all divides and has been shown to affect everything from basketball refereeing calls to hiring practices. In addition, a strong gender bias has been found in workplace scenarios, with both men and women consistently overrating men and underrating women in job qualifications (see Virginia Valian's chapter in *Why Aren't More Women in Science?* (eds S. I. Ceci and W. M. Williams); American Psychological Association Press, 2006).

### Bias cuts

"When you have homogenous, privileged groups it is hard for them to see that their decisions are inhibiting their excellence," says Meg Urry, an astrophysicist and the first woman to chair the physics department at Yale University. Most scientists think they operate in a meritocracy, rewarding excellent research irrespective of colour or gender lines. But the data show that is simply not the case, says Urry. And many scientists, she says, are "unaware of that data and unaware that they have internal biases".

To change that, several groups have begun highlighting research on bias at workshops for different science disciplines. Chemists are leading the way with the help of the Committee on the Advancement of Women Chemists based in Eugene, Oregon, by holding a workshop last year for 55 chairs from the top



O. FARMAN/CORBIS

Women remain under-represented at the higher end of the academic scale.

chemistry departments around the country (see 'Chemistry case study').

Programmes to recruit and retain university minority students in science have made steady, if small, improvements. The numbers of science bachelor's degrees awarded to minority students, about 16% of the total, is now commensurate with the number of minorities enrolled in university. The number of African American and Latino science doctorates have increased about 20% during the past ten years. "I'm encouraged by the numbers of kids at the beginning of the pipeline," says Velasco. "But my worry is that the seeds will not go into academia and find their opportunities are limited there."

For minorities, their small numbers mean that feelings of isolation begin early and are likely to persist throughout a career (see 'A political hot potato'). Many under-represented minority students come from disadvantaged backgrounds that make both financial concerns and extended family responsibilities rise to the top of the priority list when they consider a career move.

Isiah Warner, a chemist at Louisiana State University and Baton Rouge, has overseen the 15-year transformation of his department into the top producer of African American chemists' PhDs. But, he

## CHEMISTRY CASE STUDY

Chemistry as a field has made some progress towards retaining talented women and minority chemists in the academic ranks. Still, although women gain roughly a third of chemistry doctorates, they hold only 13% of chemistry faculty positions.

In January 2006, the National Science Foundation, the Department of Energy, the National Institutes of Health and chemistry leaders sponsored a workshop in which 55 chairs from the top-ranked departments around the country gathered to face the problem and take action to address it. The workshop highlighted research on implicit bias and on issues affecting women's ability to succeed in academia.

Before the workshop, when participants were asked why women were not being recruited, hired

and retained in their departments, the participants blamed factors largely beyond their control: too few women in the applicant pool, losing females to other departments and no money for recruiting both members of a couple. After the training on implicit bias, participants were more likely to admit to a lack of commitment or downright opposition to hiring female faculty members, says Geraldine Richmond, a chemist at the University of Oregon in Eugene who is evaluating the workshop's impact.

Participants left with a commitment to implement at least two items within their departments or institutions, such as doubling the number of female applicants in the next faculty search, or advocating subsidized childcare. And the participants agreed to evaluate the

effectiveness of their efforts in the future.

Physics and geosciences have followed suit with their own gender-equity workshops. Chemistry leaders are now planning a workshop to address the lack of minority faculty members, with the goal of encouraging departments to cultivate at least one minority faculty candidate in the next five years.

Biological sciences, which have similar gender imbalances, could learn from other disciplines' scientific approach and evaluation of the issue, says Donna Dean of the Association for Women in Science in Washington DC. She notes that the funding agencies for biomedical research have "not stepped up to the plate in paying attention to the changing demographics and what's happening to PhDs as they move into faculty positions". K.P.

## *Upcoming Workshop - Excellence Empowered by a Diverse Academic Workforce: Achieving Racial & Ethnic Equity in Chemistry, September 24-26, 2007*

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- Cosponsored by NIH, NSF, & DOE
- Chairs:
  - Dr. Isiah Warner, Louisiana State University
  - Dr. Nick Turro, Columbia University
- Steering Committee:
  - Dr. Mary Barkley, Case Western University
  - Dr. Sheila Browne, Mount Holyoke
  - Dr. Larry Dalton, University of Washington
  - Dr. Billy Joe Evans, retired, University of Michigan
  - Dr. Carlos Gutierrez, California State, Los Angeles
  - Dr. Rigoberto Hernandez, Georgia Institute of Technology
  - Dr. James Mitchell, Howard University
  - Dr. Sharon Neal, University of Delaware
  - Dr. Geraldine Richmond, University of Oregon, COACH
- Federal Advisors:
  - Dr. Luis Echegoyan, NSF MPS Chemistry Division
  - Dr. Michael Rogers, NIH NIGMS Pharmacology, Physiology, & Biological Chemistry Division
  - Dr. Eric Rohlwing, DOE BES Chemical Sciences, Geosciences, & Biosciences Division



Charge: To promote the development of a cadre of academic leaders who create, implement and promote programs and strategies for increasing to equitable proportions the number of racial and ethnic minorities on the faculties of departments throughout the academic chemistry community.

Thank You

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