



**Syracuse University Women in Science and Engineering**  
International Symposium  
Syracuse, NY  
October 8-9, 2010

## **Networking Across the Globe**



**Handbook of Schedules and Presenter Biographies,  
Abstracts, and Contact Information**



WOMEN IN SCIENCE AND ENGINEERING  
SYRACUSE UNIVERSITY



### **Syracuse University Women in Science and Engineering (WiSE)**

WiSE at Syracuse University is an innovative program designed to enhance and support the professional development and persistence of women faculty and students in the sciences and engineering fields.

**WiSE would like to thank all those who helped plan, organize, and facilitate the first International Symposium, including Marina Artuso, Shobha Bhatia, , Karin Ruhlandt-Senge, Gina Lee-Glauser, Corri Zoli, Sharon Alestalo, Heather Fitzpatrick, Lifang Wang, and Sean Miskell.**

**We are also greatly appreciative of the support provided by the Syracuse University Humanities Center and its director, Dr. Gregg Lambert.**

*A special thank you is also extended to Chancellor Nancy Cantor and Provost Eric Spina for their support of women faculty, the Women in Science and Engineering Program and this symposium.*

#### **WiSE Contact Information**

**Website:** <http://www.suwise.syr.edu/>

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## Symposium Program

**October 8—9, 2010**  
**SU Humanities Center**  
**301 Tolley Building**  
**Syracuse, New York 13244-1170**

### **Friday, October 8**

**9:00 am—9:30 am: Welcome**

**9:30 am—10:30 am: Status of Women Faculty at the National and International Level**

- The presentation will be on a national and international perspective regarding the status of women STEM faculty. Dr. Shobha Bhatia will present on the status of women STEM faculty in the United States, and Dr. Valerie Davidson from the College of Physical & Engineering Science at the University of Guelph, will present on the status of women STEM faculty in Canada. Dr. Patricia Rankin will discuss a global approach to diversifying STEM faculty.
  - Shobha Bhatia, Syracuse University, USA (focus: United States)
  - Valerie Davidson, University of Guelph, Canada (focus: Canada)
  - Patricia Rankin, University of Colorado, USA (focus: International)

**10:45 am to 12:35 pm: Effective National/ Institutional Policies**

- Discussion will center on two key questions. What national policies or commission recommendations have impacted women STEM faculty recruitment, retention and advancement at the institutional level? What individual institutional policies have been effective in creating long-lasting and deep organizational change and have held administration and colleagues accountable?
  - Sanae M. M. Iguchi-Arigo, Hokkaido University, Japan
  - Patricia Rankin, University of Colorado, USA
  - Maria Trigueros Gaisman, Instituto Tecnológico Autónomo de México (ITAM), Mexico

**12:35 pm—2:00 pm: Lunch at the Humanities Center**

**2:00 pm—4:00 pm: Promising Institutional & Departmental Practices that Advance Women in STEM**

- Panelists will be reporting on promising practices that support the advancement of women in STEM from post doctoral fellow to senior professor including presentations on examples of institutional and faculty-level practices that are effective at different career stages, model programs in Japan and dual-career couples. Facilitated by Gina Lee-Glauser.
  - Giovanna Declich, PRAGES project Italian Assembly of Women for Development and the Struggle against Social Exclusion (ASDO), Italy
  - Valerie Davidson, University of Guelph, Canada
  - Kimiko Fukuda, Tokyo Metropolitan University, Japan
  - Marc Sher, College of William and Mary, USA

**4:15 pm—5:15 pm: Lesson Learned Planning Session** (For symposium organizers, facilitators and notetakers)

**6:30 pm—9:00 pm: Dinner at the Genesee Grande Hotel**

**Saturday, October 9**

**8:30 am—9:30 am: Breakfast at the Humanities Center**

**9:45 am—12:30 pm: Lessons Learned**

- Group discussion and summarization of effective institutional policies and practices that address gender equity, advancement of women faculty and increasing women's participation in international collaborations. If time allows, we will discuss publication of the proceedings. Facilitated by Corrie Zoli.

**12:30 pm—2:00 pm: Informal Lunch (optional)** We will walk to Marshall St. for a meal at Panda West

## Presenter and Facilitator Information (Listed Alphabetically)

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**Marina Artuso**  
**Ph.D, Physics**  
Syracuse University, USA

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**Biography:**

Dr. Artuso, professor of Physics, joined Syracuse University in 1986. In 2008, she was the recipient of Syracuse University's Chancellor's Citation for Faculty Excellence and Scholarly Distinction and she was elected "fellow of the American Physical Society. She received her Ph.D. degree from Northwestern University in 1986. Artuso is an international leader in developing, designing, and constructing novel detector technologies and electronics for elementary particle physics experiments. Her research work is in experimental particle physics, currently in the LHCb experiment at the CERN large hadron collider. She focuses on two main areas. She is a leader in the design and development of instrumentation for high energy physics applications. In addition, she pursues studies of properties of beauty quarks that challenge our current theory of elementary particles and their interactions, and may lead to the discovery of new physics. She has been involved in the WISE leadership at Syracuse University since 2001. Dr. Artuso, in addition to presiding at the welcome session, is an organizer of this event and will facilitate the Friday introductory panel.



## Shobha Bhatia

Laura J. and L. Douglas Meredith Professor,  
Department of Civil and Environmental Engineering  
Syracuse University, USA

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### Biography:

Dr. Shobha K. Bhatia is a professor in the Department of Civil and Environmental Engineering. She is a Laura J. and L. Douglas Meredith Professor for Teaching Excellence, Syracuse University's highest award for teaching and former Chair in the Department of Civil and Environmental Engineering at Syracuse University. Dr. Bhatia has made significant contributions in both research and engineering education. Dr. Bhatia's research efforts have focused on the application of geosynthetics and natural materials in waste containment, road and building construction, and erosion control. She has numerous publications, participated in national and international conferences, and served in numerous capacities, such as Vice President of the North American Geosynthetics Society (NAGS).

Recently, Dr. Bhatia completed a research project on the technical and economic aspects of geosynthetic products in minimizing erosion in highway drainage channels. She is currently working on an erosion control project in the Catskill Mountains and a research project to evaluate the technological, political, and cultural aspects of the use of natural erosion control materials (coir and jute) in India and the United States. Dr. Bhatia is co-director of the Women in Science and Engineering (WISE) initiative at Syracuse University for the past ten years. As part of her Laura J. and L. Douglas Meredith Professorship grant, she initiated the WISE Mentoring Program and WISE Learning Community, which mostly include women students from engineering and computer science. She played an important role in the NSF-funded Engineering Education Scholar Program, which was designed to prepare young faculty for academic careers.

Dr. Bhatia is also the recipient of a NSF Faculty Achievement Award for Women for excellence in research and leadership in training future engineers. She has also been part of the National Science Foundation funded national initiatives (Women in Engineering Leadership Institute) to increase the number of women in leadership positions in academia. Dr. Bhatia, in addition to presenting, is an organizer of this event and will facilitate the Friday morning panel.

### Presentation:

*Friday Introductory Session: **The Status of Women STEM faculty at National and International Levels***

Title: "How Successful Have Initiatives Aimed at Increasing Gender Equity in the STEM Disciplines Been in The United States?"

### Abstract:

Dr. Bhatia's presentation focuses on specific initiatives aimed at increasing gender equity in the STEM disciplines, especially the National Science Foundation ADVANCE Institutional Transformation Grants and the WELL initiative. Dr. Bhatia considers how the institutions that have taken part in these initiatives compare with

statistics at the national level.

**Publications in Area of Gender Equity:**

- Bhatia, S. and Amati, J.P. 2010. "If these Women Can Do It, I Can Do It Too": Building Women Engineering Leaders through Graduate Peer Mentoring. ASCE Leadership and Management in Engineering. Vol 10(4): XX. (Forthcoming)
- Zoli, C., Bhatia, S.K., Davidson, V. and Rusch, K. (2008), Engineering; Women and Leadership. San Rafael, CA: Morgan & Claypool Publishers. ISBN: 9781598296686 (paperback) or 9781598296693 (ebook).



**Valerie J. Davidson**  
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Professor, School of Engineering  
University of Guelph  
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**Biography:**

Valerie is a professor in the School of Engineering at the University of Guelph. Her current research focus is assessment and management of microbial risks in food systems. Valerie is committed to the support of women in science and engineering. From 1990 to 1992, she served as a member of the Canadian Committee on Women in Engineering. In 2002 Valerie was a co-recipient of the Canadian Council of Professional Engineers (CCPE) Award for Support of Women in Engineering, an award that recognizes noteworthy support of women in the engineering profession and engineering excellence. In September 2003, Valerie was named as the NSERC Chair for Women in Science and Engineering for the Ontario region. She started a renewal term in 2008 with financial support from Research In Motion (RIM). The objectives of the chair program are to encourage women to study science and engineering and to consider careers in related areas and improve retention of women in undergraduate programs and early careers related to sciences and engineering ([www.cwse-on.ca](http://www.cwse-on.ca)).

**Presentation(s):**

*Friday Introductory Session: **Status of Women STEM faculty at the National and International Level***

Title: **Status of Women STEM faculty in Canada**

**Abstract:**

The Natural Sciences and Engineering Research Council (NSERC) has supported five Chairs for Women in Science and Engineering (CWSE) across Canada since 1996. The regions are: Atlantic, Quebec, Ontario, Prairies and British Columbia and Yukon regions. Each Chair develops a program that suits the needs of her region and

the 5 regional Chairs collaborate as a national network. As a national network, the CWSEs have started to publish equity indicators for women faculty in STEM disciplines.

Equity indicators based on customized analysis of Statistics Canada data will be presented. One of the key indicators compares new appointments to the pool of recent doctoral graduates by gender and by disciplines. We are also working to aggregate data from institutions that can be used as indicators of career progress, particularly at mid- and senior levels. This is challenging but critical in light of the recent selection of the Canada Research Excellence Chairs.

**Friday Afternoon Panel: *Promising Institutional and Departmental Practices that Advance Women’s Careers in STEM***

Title: “Promising Institutional and Departmental Practices that Advance Women’s Careers in STEM: Some Canadian examples”

**Abstract:**

The regional NSERC Chairs for Women in Science and Engineering work at institutional, regional and national levels towards increasing the representation of women in faculty and leadership positions in Canadian universities. This presentation will examine selected examples of institutional and faculty-level practices that are effective at different career stages.

At most Canadian universities, there are clear institutional policies around parental leaves for both female and male faculty members. Many institutions provide financial support for maternity leave periods and administrators recognize the need to adjust timelines for review of probationary faculty who take parental leaves. However in STEM disciplines, many women are in the position of being the only or first female faculty member in a department or research unit. So there can be challenges in understanding the practical details of policy implementation. Some examples of progressive departmental practices will be highlighted.

Senior leadership at faculty and department levels is critical in creating a culture that recognizes the contributions of women faculty and promotes women to leadership positions. Two examples – one in a science faculty and one in an engineering faculty – will be used to illustrate the impact of pro-active leadership.

**Publications in Area of Gender Equity:**

- Smit Quosai, T., Davidson, V.J., Ghazzali, N., Moloney, C., and J. Vassileva 2010. “Defining Equity Indicators for Benchmarking Women’s Participation in Science and Engineering Faculties across Canada” in “The scientific and technological careers of women and men - Private temporalities, professional temporalities; public and corporate policies”, Proceedings of the PROMETEA International Conference, Paris (France), November 26-27, 2009. Sense Publisher B. V. (Rotterdam). (*NSERC National CWSE Network*)
- Darisi, T., Davidson, V.J., Korabik, K. and S. Desmarais 2010. Commitment to graduate studies and careers in science and engineering: Examining women and men’s experiences. *International Journal on Gender, Science and Technology*. 2(1): 48-64. (*NSERC National CWSE Network*)
- Rohatynskyj, M., Davidson, V., Stiver, W. and M. Hayward<sup>1</sup> 2008. “Obstacles to Gender Parity In Engineering Education”, *Forum on Public Policy Online: A Journal of the Oxford Round Table*, Spring 2008 (<http://forumonpublicpolicy.com/archivespring08/rohatynskyj.Rev.pdf>) 30 p. (*Teaching Support Services funds, U of Guelph*)
- Zoli, C., Bhatia\*, S., Davidson, V. and K. Rusch\* 2008. *Engineering, Women and Leadership, Synthesis Lectures on Engineers, Technology and Society*, Morgan & Claypool Publishers 3(1): 1-106. (*NSF Advance Program*) \* Bhatia – Syracuse University; Rusch – Louisiana State University

- Davidson, V.J., Stiver, W. H., Newberry, J., Yuval, L., Hayward, M. and M. Rohatynskyj 2008. "Computer-based design tools in engineering – steps to ensure a gender-inclusive learning environment", Proceedings of the 12th International GASAT conference: "Challenging and changing the status quo", B. Hodgson and D. Scott Fears (ed.), Albion Press, Brighton UK, May, p.137-143.



## Giovanna Declich

Ph.D., Sociology

PRAGES project Italian Assembly of Women for Development and the Struggle against Social Exclusion (ASDO)

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### Biography:

Giovanna Declich, sociologist, is the executive director of the Italian Assembly of Women for Development and the Struggle against Social Exclusion (ASDO); expert in project design in the fields of science-society relationships and gender issues. In 2008-09 has been member of ASDO team in PRAGES ("Practicing Gender Equality in Science") project and is currently member of the WHIST team ("Women's careers hitting the target: gender management in scientific and technological research") both funded by the EC under FP7, Work program Science in society. She carried out research activities on women in Europe and worldwide. She led the European project "Women in Politics" (European Social Fund). She directed an European project on Equal opportunity and SMEs in Italy (European Social Fund). She was the director of an Action Research on women and social risks in Dakar metropolitan area (World Bank). Since 1983 she has been carrying out activities in Italy, Belgium, Czech Republic, Denmark, France, Slovakia, Hungary, Ireland, United Kingdom, Algeria, Senegal, Mali, Mauritania, Niger, USA, Malaysia, Guatemala, El Salvador, Honduras, Argentina, Uruguay, participating to a number of researches, studies and projects connected with social topics, namely social exclusion, equal opportunities, citizens' rights and playing an active role as adviser and/or tutor in the organization of seminars, symposia, adult education and training courses.

### Presentation:

**Friday Afternoon Panel: *Promising Institutional and Departmental Practices that Advance Women's Careers in STEM***

Title: Practicing Gender Equality in Science: suggestions for academic and research institutions resulting from current good practice in Europe and abroad

### Abstract:

European scientific and technological research sector is characterized by a substantial gender disparity, entailing a significant waste of talent and the general risk of losing competitiveness and suffering economic loss for EC Member States and individual research organizations. In 2009 the decennial conference of EU policy on gender in science stated, as a solution to the shortage of highly skilled people, the need to shift the focus of interventions from "fixing the women" so that they fit into the existing system, to promoting structural and

cultural change (“fix the organization”) and strengthening the research and innovation capacity of the research bodies (“fix the knowledge”).

In 2007 the Commission financed the project “Practicing Gender Equality in Science” – PRAGES, aimed at collecting and evaluating, in a benchmarking perspective, the initiatives implemented in Europe, USA, Australia and Canada to support women’s progression in scientific and technological careers. The project resulted in guidelines to implement structural change (“Guidelines for Gender Equality Programs in Science”, 2010).

The PRAGES results highlight the need to base actions and policies on a deeper understanding of the difficulties that hinder women’s careers. In order to be successful and durable, such actions must adopt an approach at one holistic (i.e. capable of including the entire spectrum of critical issues) and analytical (identifying the specific dynamics of the context under study and the most appropriate solutions). The programmes overview led to highlight three overall strategies providing the backbone of the Guidelines:

- Making ST institutions an enabling environment for women;
- Including the gender dimension in the very process of research and innovation design;
- Promoting women in scientific leadership positions.

The Guidelines also provide specific instructions and concrete examples on the implementation rules, methods and instruments which make it possible to turn these strategies into practical action.

#### **Publications in Area of Gender Equity:**

- “Action-research on women and enterprises,” Final Report, Rome, 2000; “
- “Femmes et risques sociaux dans la zone métropolitaine de Dakar”, Rome, 1999;
- “Women and decision-making” (with A. Cancedda and L. d’Andrea), Rome, 1996.



**Kimiko “Kokko” Fukuda**  
Ph.D., Biology  
Associate Professor, Department of Biological  
Science  
Tokyo Metropolitan University

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#### **Biography:**

Kimiko Fukuda is an Associate Professor in the Department of Biological Science, at Tokyo Metropolitan University. She graduated from the University of Tokyo and obtained a Ph.D. in the Department of Zoology, at the University of Tokyo. She has been one of the central members of “the Girls Science Summer Camp” for the past six years, an activity that was awarded “The National Institute of Science and Technology Policy Remarkable contribution to science Award” in 2005. She was a president of this camp in 2008. She is also active in the field of international science education for the younger generation. She participated in “The Japan/Canada WISET Exchange Lectureship Program” sponsored by the science council of Japan and the Royal society of Canada. As

part of this program she lectured at Canadian colleges, high schools and junior high schools in 2007. She is also a member of the gender equal committee of the Molecular Biology Society of Japan.

**Presentation:**

*Friday Afternoon Panel: **Promising Institutional and Departmental Practices that Advance Women's Careers in STEM***

Title: Promoting Gender Equality in the Field of Science and Technology in Japan

**Abstract:**

It is well known that the percentage of female researchers of Japan is far below that of European Countries and the US. In order to improve this situation, the Japan Inter-Society Liaison Association Committee for Promoting Equal Participation of Men and Women in Science and Engineering (EPMEWSE), which includes 67 academic societies in science and engineering was established in 2002.

EPMEWSE carried out two large questionnaire surveys of its members on 2005 and 2008. The results clearly showed that there is gender gap and the biggest problem is that during maternity and childcare, female researchers have to spend more time at home. As a result, female researchers achieve less than males, and therefore, under strict performance-based evaluation women fail to get positions. The results from these questionnaires also suggest that if work environment is improved, female researchers become more active. Based on this data, EPMEWSE made a proposal to the government, which was formulating the third basic plan (roles & regulations) for S&T. In the plan issues EPMEWSE pointed out were built in and the government established three plans to promote female researchers. One of them is to develop model programs for supporting female researchers and 45 facilities have improved the work environment for female researchers. However, despite these efforts, the number of female researchers is increasing very slowly. From 2009 the government set up another grant, "Supporting Positive Activities for Female Researchers Program". So far twelve universities have received this grant, and 10 universities among them started "Female-specific recruitment". In examples from these universities, there were many more female applicants than expected even in fields traditionally dominated by men. Particularly recruitment of female researchers from broad field attracts very high-level applicants. This recruitment system may dramatically change the conditions of the female researchers in universities.



Sanae M.M. Iguchi-Ariga,  
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Researchers  
Professor in the Graduate School of Agriculture  
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**Biography:**

Sanae Iguchi-Ariga is the Vice-Executive of the Support Office for Female Researchers and a Professor in the Graduate School of Agriculture at Hokkaido University. She was born and brought up in Tokyo. Sanae earned her doctorate in 1986 in medical science from the University of Tokyo. After time as a Postdoctoral Research Fellow at the University of Zurich and her assistant professorship at the University of Tokyo, she was promoted in 2003 to Professor at the Graduate School of Agriculture, Hokkaido University. She was the first female professor appointed since the establishment of the Graduate School. Her specialized fields are in the areas of biochemistry and molecular biology. Sanae was awarded “Nice Step Researchers 2009” by the National Institute of Science and Technology Policy (NISTEP) of the Ministry of Education, Culture, Science and Technology in Japan.

**Presentation:**

*Friday Morning Panel: Effective National/Institutional Policies Panel*

Title: For Development and Sustainability of Female Researchers' Career: Practice and Perspectives in Japan

**Abstract:**

Promotion of female researchers has practically started in Japan only in 2006. I briefly introduce the recent activity of Hokkaido University as an example of the movement in whole Japan.

The Support Office for Female Researchers in Hokkaido University (*FResHU*), established in 2006 within the framework of the university's policy of gender equality and promotion, was triggered by successful adoption of the newly-started MEXT fund for “Model Programs to Support Female Scientists”. Hokkaido University has committed itself to a “*Triple Twenties Policy*”: by 2020, 20% of all staff in teaching and research positions should be women. To achieve this goal, the University has devised a “*Positive Action Hokudai-Scheme*” which incorporates substantial incentives for faculties and departments to select and appoint women. *FResHU* has been developing various support mechanisms, which should provide prerequisite conditions for achieving effective affirmative action. *FResHU* always looks for, and has brought a variety of, creative solutions to problems and challenges which women often face during their career development, in particular major life-events such as marriage, birth and raising of children, or mobility and career development of their partners.

The implementation of the “*Positive Action Hokudai-Scheme*” as well as the improvement of supporting environments for 3 years has revealed issues and concerns, which we will overcome in forthcoming years through more powerful positive action supported by an advanced MEXT fund for “Accelerated Innovation of Fostering System for Female Scientists.” Not only in Hokkaido University but also in other Japanese universities, is the female ratio of faculty staff particularly low in the fields of science, technology (engineering) and agriculture. Twelve national universities including Hokkaido University are now driving the project supported by the advanced MEXT fund while attempting various positive/affirmative action to recruit promising female scientists as faculty members. In parallel with the continuing “*Positive Action Hokudai-Scheme*” for all the departments/faculties, we are propelling the “F3 Project” to strongly promote recruitment of female faculties in STA fields and empower them in their scientific endeavors in international and interdisciplinary fields.



**Gina Lee-Glauser**  
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Vice President for Research  
Syracuse University, USA

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**Biography:**

Gina Lee-Glauser received her B.S. and M.S. in Mechanical and Aerospace Engineering from University of Buffalo, and a Ph.D. in Mechanical and Aeronautical Engineering from Clarkson University. She conducted her postdoctoral work at NASA Langley Research center under the National Academies National Research Council Research Associate Program. Her areas of expertise include Structural Dynamics and Control, Active and Passive Vibration Control, Learning Control, and System Identification. Dr. Lee-Glauser's educational endeavors consist of the ABET Engineering Accreditation Commission member; Involved in undergraduate engineering curricular reform; Institution-wide interdisciplinary forum facilitator; promotion and support of Underrepresented minority students and Women in STEM. Prior to her current duties, Dr. Lee-Glauser was the Director, for the New York State Center for Advanced Technology, Center for Advanced Systems and Engineering (CASE) at Syracuse University and had overall responsibility of the University's Office of Technology Transfer and Industrial Development which support activities such as invention disclosures/protections, market and negotiate license agreement, and joint industrial projects, support incubator tenants, and the CASE Co-Op program. Dr. Lee-Glauser will facilitate the Friday afternoon panel.

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**Patricia Rankin**  
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Associate Vice Chancellor for Research  
Professor of Physics  
University of Colorado, Boulder, USA

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**Biography:**

Patricia Rankin is interim Associate Vice Chancellor for Research and a Professor of Physics at the University of Colorado, Boulder. She did both her undergraduate and her graduate work at Imperial College, London. As an undergraduate student she was awarded the "Governor's Prize" for graduating first in her year in

Physics. After a Science and Engineering Research Council Fellowship she moved to the United States to become a postdoctoral researcher at the Stanford Linear Accelerator Center working as an experimentalist. Her research interests in particle physics include precision measurements as tests of the Standard Model and studies of heavy quark physics with a focus on understanding the symmetries of nature. In 1988 she became an Assistant Professor of Physics at the University of Colorado and was awarded tenure in 1995. She worked for two years in Washington D.C. as a program officer for particle physics at the National Science Foundation. Returning to Boulder she was promoted to Full Professor. As Principal Investigator for CU-Boulder's NSF Advance Institutional Transformation program she took on a leadership role in working to address the lack of representation of women in STEM fields and in promoting best practices for departmental and campus leaders. She has studied how participation in networks affects success in academia and is also interested in effective decision making. She taught a web based course this spring (2010) on how to work effectively in teams. The administrative roles she has held at the university include serving as Associate Dean for Natural Sciences in the College of Arts and Sciences and a Faculty Director position in the Office of Faculty Affairs focusing on promoting inclusive excellence. She is a recipient of a Sloan Fellowship, a Department of Energy Outstanding Junior Investigator Award, the Elizabeth Gee award, and the "Best Shall Teach" awards among others recognizing her contributions to interdisciplinary research and to the University of Colorado at Boulder.

**Presentation:**

*Friday Introductory Session: **The Status of Women STEM faculty at National and International Levels***

Title: "Science is Global – Can we take a Global approach to Diversifying the Science Workforce?"

**Abstract:**

A quick look at the data on the status of women in the science, technology, engineering and mathematics fields (the STEM disciplines) within the US shows wide variation both in the percentages of women participating in these fields and in how the percentage of participation changes at different career stages. Similarly, comparisons of participation rates in the same field in different countries also show significant variation. Even in countries that report high participation rates, women may not have a proportionate influence in key decision making roles. These differences suggest that a "one size fits all" approach to making the scientific workforce more diverse and to increasing the influence of women, that ignores societal, economic, and cultural differences, is likely to have limited effectiveness. However, developing a better understanding of the causes of these variations can be valuable as a guide to what strategies will be most effective in a particular situation and this talk will discuss some of that research. Also, while the situation is complex and details may differ, the impact of cognitive errors such as "unconscious bias" is likely global and to raises the question about if there are any universal best practices which if adopted would help everyone be more productive regardless of their gender and environment. I believe that developing an environment that fosters inclusive excellence and enables all women to reach their full potential as scientists and engineers is crucial if the STEM fields are to successfully address global problems such as climate change mitigation and meeting energy needs.

*Friday Morning Panel: **Effective National/Institutional Policies Panel***

Title: "What I would do if I Ruled the World – Policies and Programs that Advance Excellence

**Abstract:**

The high cost of replacing individuals who leave careers in science, technology, engineering, and mathematics (STEM) means that programs focused on their retention and on helping them to be more effective and productive are very cost effective for the industries and institutions that have them. There is now a growing consensus that some activities should be components of any program that seeks to improve the workplace environment for practitioners in the STEM fields. Educating recruitment committees about the effects of unconscious bias on judgments, stressing the need for unit directors to learn how to manage, and encouraging

meeting planners to consider child and senior care needs, are all examples of the best practices that all institutions should be adopting. Helping candidates for positions learn about the support offered for work-life balance and providing information on the local environment can provide a competitive edge in attracting the best qualified candidates to accept a job offer, as well as providing answers to questions that candidates may be reluctant to ask (and which interviewers cannot ask). Clear and transparent policies on the stopping of tenure clocks (preferably asking individuals to opt out rather than in) and on the criteria for promotion and tenure also play a role in helping to retain faculty. Focusing on how to make the institution better for everyone will likely have a differential positive benefit for members of under-represented groups but avoiding “special treatment” will make advocating for and maintaining programs much easier.

#### **Publications in Area of Gender Equity:**

- Vital Variables and Gender Equity in Academe: Confessions from a Feminist Empiricist Project, Joyce Nielsen, Robyn Marschke, Elisabeth Sheff, and Patricia Rankin, SIGNS Vol 31(Autumn 2005)1-28.
- “Networking”, Patricia Rankin and Joyce Nielsen, invited contribution to “Success Strategies for Women in Science” edited by Peggy Pritchard, Elsevier (2005).
- Demographic Inertia Revisited: An Immodest Proposal to Achieve Equitable Gender Representation among Faculty in Higher Education, Robyn Marshke, Sandra Laursen, Joyce Nielsen and Patricia Rankin. Journal of Higher Education 78(1) , 1-26 (2008)
- “Weak Links, Hot Networks, and Tacit Knowledge – Why Advancing Women Requires Networking”, Patricia Rankin, Joyce Nielsen, and Dawn Williams, invited contribution to “Transforming Science and Engineering: Advancing Academic Women”, edited by A. J. Stewart, J.E. Malley and D. LaVaque-Manty (2007) University of Michigan Press.



**Karin Ruhlandt-Senge**  
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#### **Biography:**

Karin Ruhlandt-Senge received her Dr.rer. nat. from Philipps Universitaet in Marburg Germany in 1991. After postdoctoral training at University of California Davis, she started her independent faculty career in 1993 at SU, where she now is Department chair and distinguished Professor. Karin Ruhlandt-Senge’s research interests lie in the chemistry of highly reactive metals and their applications in organometallic and materials chemistry. She has published 140 peer reviewed publications. For the last ten years she has been of two co-Directors for the NSF funded Research experiences for undergraduates in Chemistry at SU. She has been a co-

director for the Women in Science and Engineering since XX, and one of the co-PI on SU' Advance IT grant. Dr. Ruhlandt-Senge is one of the organizers of this event as well.

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**Mark Sher**  
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Professor  
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**Biography:**

Marc Sher received his Bachelor's degree at UCLA and his PhD from the University of Colorado. After postdoctoral positions at UC Santa Cruz, UC Irvine and Washington Univ., St. Louis, he joined the faculty at the College of William and Mary (which, in spite of its name, is a public class-1 Research University). He has published over 100 papers in theoretical particle physics, with close to 4000 citations. In 1999, he was elected a Fellow of the American Physical Society. In addition to the Dual Career Couple Report, he has served as a member of the Committee on the Status of Women in Physics.

**Presentation:**

*Friday Afternoon Panel: **Promising Institutional and Departmental Practices that Advance Women's Careers in STEM***

Title: Dual Career Academic Couples

**Abstract**

One of the main obstacles to increasing the number of women in science is the problem of dual career couples. In physics, for example, 68% of married women physicists are married to scientists, whereas 17% of married male physicists are married to scientists. In 1997-8, Laurie McNeil and I conducted a survey on the issue, and wrote a 50-page report outlining the problems and some potential solutions, including various policy recommendations. Follow-up articles appeared in Physics Today and APS News. The APS sent a copy of the report to every department chair and Dean in the country, discussions were held with various governmental officials, and the report has been downloaded over 40,000 times. Although progress since then has been substantial, there is much more that could be done.

In the talk, the survey will be briefly summarized and the results presented. Examples of serious discrimination against dual career couples (primarily affecting women) will be presented, followed by some of the solutions couples have found. Various institutional responses, some positive and some negative, will be discussed, as well as federal responses. Finally, the substantial changes in academic policies in recent years, which are making the situation more tractable, will be presented.

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**Biography:**

Dr. María Trigueros did her undergraduate and graduate studies in Physics at the Nacional University of México (UNAM); she worked on her PhD Thesis at the University of California at Berkeley. Later, due to her interest in the teaching and learning of Mathematics and Physics she obtained a PhD in Education at the Universidad Complutense de Madrid, in Spain.

Since 1981 until today, Dr. Trigueros works as Professor in the Mathematics Department at Instituto Tecnológico Autónomo de México (ITAM); she was during 10 years the chair of the department. Before ITAM, Dr. Trigueros worked at the Institute for Research in Material Science at UNAM and also at the Center for Science Communication at UNAM.

Dr. Trigueros has contributed to several national educational projects in México. She was in charge of the development of Mathematics materials for a project called “Enciclomedia” which introduced interactive digital Technologies to all the classrooms in the country for 5<sup>th</sup> and 6<sup>th</sup> grades, she served as evaluator in projects EFIT and EMAT concerned with the introduction of technology in the teaching of Physics and Mathematics, and is one of the authors of the Physics Teachers’ Textbook used by all the secondary teachers in the country from 1995 to 2006. She contributes as editor of several Mexican and Latin American journals in Mathematics Education and Research on Education.

Teaching is an important part of Dra. Trigueros’ academic life. Teaching and researching go hand in hand for her. Her research has focused mainly in Mathematics Education. She has made important contribution to the teaching and learning of Algebra, Linear Algebra, Calculus, and on the use of technology and modeling in the teaching of Mathematics and Physics. She has also been interested in Gender Studies. She has contributed with chapters in books on gender published by the International Commission of Mathematics Education (ICMI), co-coordinated the working group on Gender in ICME-XI in 2008 conference and has been invited to co-coordinate the working group again at ICME-XII in 2012.

Dr. Trigueros’ work has been recognized both in her country and internationally. She is a member of the Mexican Academy of Science and of the Mexican System of Researchers. She was invited as a founding member of an international group of researchers known as RUMEC (Research in Undergraduate Mathematics Education Community) and in 2006 received the Luis Elizondo Award for Scientific and Technological Research for her contributions to research on Education. She collaborates with researchers from several countries and has been invited to give conferences and courses in Spain, France, Chile, Brazil and the United States.

**Presentation:**

**Friday Morning Panel: *Effective National/Institutional Policies Panel***

Title: Innovative Gender Programs in Mexican Universities: From the published policies to the everyday practices

**Abstract:**

A revision of the published policies from different universities in Mexico reveals that in the last 10 years there has been an increase of programs and projects intended to reduce the barriers for women faculty. Nowadays, most of the Mexican universities have stated in their regulations specific rules to reduce inequalities for women researchers, teachers and students. However, only a few of them have taken a more active role in designing innovative programs to increase the number of women researchers in STEM related careers or to strengthen the academic position of women researchers and teachers, and their participation in academic activities.

The National University of Mexico (UNAM), the largest university in México, for example, has developed two interesting programs. One is directed to increase the number of young women in STEM related faculties and research institutes, to increase the number of scholarships to good students in Physics, Mathematics and Engineering schools, and to the promotion of research by existing faculty. The other consists of rewards designed to women researchers who have made important contributions.

The effective advancement of women in their careers, however, seems to be prevented by everyday practices that tend to ignore policies, or at least to apply them in a limited way. Women's opportunities in Mexican universities do not reflect yet the intentions of the new programs and regulations; there is still a long way to go towards fostering the presence of women in STEM related careers, and to give those who are already there the conditions needed for equity in their development.

In this presentation I will talk about changes in Mexican university policies and one specific innovative program. I will complement the description of those programs with some case studies where professors from those universities talk about how those policies and programs are being put to practice, and to what extent they really help promote women's participation in STEM related programs and equity among faculty members.

**Publications in Area of Gender Equity:**

- 2010 Ursini, S. Ramirez, P. , Rodríguez, G., Trigueros, M. and Lozano, M. D. Studies in Mexico on Gender and Mathematics. In H. Forgasz, J. Rossi Beker, K. W. Lee and O. B. Steinhorsdottir (Eds.) *International Perspectives on Gender and Mathematics Education*. Information Age Publishing Inc. pp. 147 – 172.
- M. Trigueros & Helen Forgasz. "Conference Report ICME Topic Discussion Group #32: Gender and Mathematics Education". In IOWME Newsletter, Volume 23, No. 1, junio 2009, pp. 19-23.



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**Biography:**

Corrie Zoli is an INSCT Research Fellow with research interests in national and international security and humanitarian issues with a focus on the new war, science-technology issues, and gender, culture, and diversity. With her Ph.D. in cultural studies, her work adapts new critical methodologies—a concern for cultural interests (ethnicity, religion, ideology, norms, rhetoric, heritage, identity) in world affairs, for instance—to traditional security topics, whether grand strategy, understanding patterns of global conflict, or transnational security issues. She also has an area specialty in the Middle East and has completed all coursework for the Masters of International Relations and Certificate of Advanced Study in Security Studies from the Maxwell School at Syracuse University. Before coming to INSCT, Zoli was a postdoctoral fellow in science-technology and diversity issues at the L.C. Smith College of Engineering & Computer Science, Syracuse University.

Her current research focuses on global security issues at the intersection of cultural studies and security policy, with additional interests in gender and identity, terrorism, critical theory, and globalization. She is currently preparing a book on “strategic identity” in the context of the new war, how states and nonstate actors (often unwittingly) create political identities in implementing their security goals and grand strategies. This project looks at how the Arab *mujahedeen* in the aftermath of the Afghanistan-Soviet wars (1979-1989) became a transnational political identity that was both coherent enough for members to see themselves as brethren but flexible enough to take in recruits across diverse national cultures, tribes, regions, etc. It also explains how, despite most theories of terrorism, the preponderance of empirical evidence suggests that terrorists use these unlawful tactics as part of an identity imperative, to create or maintain strong affective ties with fellow terrorists, and not as an effective strategy motivated by political ends. Among other aims, Zoli’s research efforts demonstrate a consistent priority: the value added to “real world” political and international issues and policy analysis by interdisciplinary academic research. Dr. Zoli will facilitate the Saturday morning “Lessons Learned” Session.

*Original White Paper*

## Networking Across the Globe

*“An international symposium on the status of women STEM faculty from their perspective.”*

***Abstract: Syracuse University’s Women in Science and Engineering (WiSE) program has impacted campus culture and supported women students and faculty for thirteen years. With the greater emphasis on interdisciplinary collaboration and globalization, WiSE has begun to explore what women faculty face at institutions of higher education in other countries. What is the international status of women faculty in STEM? From a grassroots faculty perspective, what are the particular needs of women faculty in each country and what initiatives show promise in addressing the question of why so few women pursue STEM faculty positions and why they leave?***

There is an oft repeated question in the academy today, one that has been asked for too many years and in too many countries. That question is “Why are there so few women faculty in science, technology, engineering and mathematics?” While there is no denying that progress has been made, the problem remains entrenched in higher education around the world. Many different approaches have been pursued to facilitate a stronger presence of women in leadership positions in science and engineering professions, with substantial investments from funding agencies, foundations, and diversity political offices across the globe.

The Syracuse University’s Women in Science and Engineering (WiSE) members have undertaken a series of initiatives locally to address this challenge and are now transitioning to a broader institutional and national effort. Therefore, it seems appropriate to host an international symposium to explore the international status of women faculty in science, technology, engineering and mathematics (STEM) from the grassroots perspective of faculty.

The event will be held on October 8-9<sup>th</sup> 2010 at Syracuse University’s (SU) Humanities Center in Syracuse, NY, USA. Women faculty from Asia, Europe, North America, and South America will spend a day and a half presenting and discussing the effectiveness of policy and practices in the country in which they work, as well exploring innovative cultural initiatives and transformative scholarship enterprises opened up by an increased presence of women in leadership positions in science and engineering. There is a need for global sharing of knowledge and information about the best practices that lead to institutional transformation and the cultural opportunities opened up by a more diverse leadership.

Our research indicates that a consensus across the globe exists about this shared problem, and about the need to rectify it, however different nations have taken different approaches. A common component in the various approaches is to include a detailed assessment process to quantify the nature of the problem and develop metrics for progress. At the national level, the European Union established a commission to promote the participation and equality of women in the sciences on a Europe-wide basis. In their last report, *Gender and Research Beyond 2009*, they outlined four key strategies: 1) The importance of top-level support of change, 2) Structural – and cultural – change is possible, 3) Women and men – and institutions – benefit from a balanced life, and 4) School science (pre-college) has an important role. (Mody & Brainard, 2005). The Natural Sciences and Engineering Research Council of Canada established *Chairs for Women in Science and Engineering Program*. This program awards one Chair for each region including the Atlantic, Quebec, Ontario, Prairie, and British Columbia regions. The goal of this Chair program is to increase the participation of women in science and engineering and to provide role models for women considering careers in these fields.

The United States has funded research and implementation projects to understand and disseminate best practices in recruiting, retaining, and advancing women faculty in STEM encouraging cultural transformation within individual higher education institutions, as well as projects to impact k-12 education. One example is the National Science Foundation’s Advance Institutional Transformation program. Through this last

national initiative, we have a much broader perspective of the status of women STEM faculty in the U.S. than ever before and which programs are effective in changing the status quo. We do not know, however,

- What is being done to make a difference at the institutional level in other countries?
- What are the quick fixes that make an immediate difference and the deep abiding practices that promote broad cultural change?
- What barriers are consistently not being addressed in
  - the personal life of women STEM faculty,
  - in the research practices on campus, or
  - in promoting equality in judgment of credibility and competence?

Syracuse University is increasingly a multi-cultural campus with a rapidly increasing presence of international faculty and students. As a campus, we are aggressively pursuing collaborations and partnerships that span economic sectors and nations. Yet, women continue to be underrepresented in STEM disciplines, which impacts representation in collaborative, interdisciplinary projects. The National Science Foundation's *2006 Survey of Doctorate Recipients* showed that women were less likely to engage in international collaboration. "Women scientists and engineers in the US are at a disadvantage because they are participating in fewer international partnerships than US men but also they are less engaged in international collaboration than women in other countries." (Tsapogas, NSF presentation 2009) There are lessons to be learned by understanding what is done in another country and contemplating adaptations that will fit with the local culture.

We have invited women from around the world to offer observational and theoretical contributions on the core topics of institutional policy and practice. We will explore different methodologies, while searching for common ground, and the development of international collaboration towards innovative and transformative programs at the symposium. Ultimately we plan to disseminate the knowledge acquired in this workshop in published proceedings.

The first part of the symposium agenda will look at national policies that are effective at reducing the barriers for women faculty. What national policies or commission recommendations (legal, social and economic) have impacted women faculty recruitment, retention and advancement at the institutional level? In a recent European Commission report it was noted that "In countries that spend more on research and development, researcher salaries tend to be higher, and more men and fewer women become researchers. In countries that invest less in science, scientists are typically paid less and there are more women scientists." This finding would suggest that economic and funding decisions can make an impact, if implemented strategically. But it would also suggest that deeply held gender constructs determine that the better paying jobs, and the more important, should be filled by men and men are given the advantage and women the disadvantage in pursuing them. If this is the case, it is critical that national policies be examined. The second aspect of policy to be explored would focus on the individual institutional policies that have been effective in creating long-lasting and deep organizational change and have held administration and colleagues accountable.

The second part of the agenda will entail women faculty reporting on promising practices that support the advancement of women from graduate student to senior professor. Such efforts would have to include both an equity and retention focus. What programs or services exist in this area? Many professors are married or partnered with other professors or professionals, the issue of dual-career hires and other considerations need to be explored. Finding creative solutions to this added complexity in hiring women STEM faculty could make all the difference in recruitment and retention.

Work-life balance issues are a predominate cause of women dropping off the academic track to full professorship or accepting second tier academic positions as well as positions in industry. Once women leave the academy, their considerable expertise and creativity are often lost. Science is progressing at such a rate that within a short period of absence the gap in knowledge is considerable. It would behoove administrations to retrieve this pool of expertise by offering bridging, retraining or updating programs that allow women to return to teaching and research. (Bonder, n.d.)

Cohen-Fix reported that "women tended to drop out of research between post doctorate positions and running their own labs. Women make up 45% of the post doc positions but only 29% of tenured faculty." And for those who put in the grueling 60 hour workweeks and go home to household and family responsibilities,

they must still face barriers such as inequitable assessment of standards for promotion. A recent American Association of University Women (AAUW) report, “Why So Few” noted considerable confirmation of continuing cultural bias. “One study of postdoctoral applicants, for example, found that women had to publish 3 more papers in prestigious journals, or 20 more in less-known publications, to be judged as productive as male applicants.” (AAUW, 2010). What programs and policies demonstrate success in altering these types of inequity?

The answer lies not in addressing the issue as a “woman’s problem” but in addressing it as an administrative concern about the total environment in which *all* STEM faculty must operate. Furthermore, new programs, initiatives and technologies should not reproduce old inequalities. Gloria Bonder from UNESCO has identified the need to “build gender equity and inclusion from the ground up.” Symposium members will identify and discuss successful strategies for creating institutional ownership embedding inclusion and equity or gender mainstreaming, as it is called in Europe, to the core of a university. Ms. Bonder will present at the symposium dinner.

Institutions with evident equitable and inclusive climates realize considerable benefits. (Handlesman et. Al, 2005). More innovative solutions to problems are generated, a higher level of critical analysis from multiple perspectives is implemented and there exists a more favorable working environment for all faculty. From this day and a half of presentation and discussion, a manuscript will be developed detailing promising practices and new areas of consideration that impact women STEM faculty around the world and bring the benefits of many, varied voices to science and technology.

In conclusion, this symposium will be a forum to initiate a global conversation on best practices and policy to foster women’s leadership in science and engineering within the academy, and the transformative power that this change promotes.

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