

# Three Year Report

Fall 2008— Fall 2011



## Supporting persistence and success for women in STEM

### WiSE MISSION

Syracuse University's **W**omen in **S**cience and **E**ngineering program fosters current and future success of women in science, technology, engineering, and mathematics (STEM) through programs designed to address their unique strengths and challenges at every stage from entering freshman to accomplished professional.

### Key Strategies:

- ◆ **Encouraging persistence** of undergraduate women students in STEM through programs that foster a sense of community and enhance support networks; build skills and facilitate substantive engagement in research and scholarship; and, create in-depth understanding of the opportunities and rewards of careers in science and engineering.
- ◆ **Provide professional development and academic support** programs that encourage graduate STEM women and post doctoral fellows to pursue careers in sciences and engineering, to persist in their degree program at Syracuse University and/or to thrive professionally as they advance toward career goals.
- ◆ **Creating a culture of success** for women faculty in STEM through programs that increase resilience, support advancement and improve career and personal productivity and balance.
- ◆ **Building a strong community for STEM women** across disciplines and with other women scientists and engineers on campus and across the globe. WiSE impacts individuals and the campus community through networking, collaborative planning, advocacy, and technical support.

WiSE –FPP  
Associates at  
Professional  
Writing  
Workshop.



*Through WiSE not only did I shape my professional development but I also met colleagues from diverse fields which has broadened my research interests.*



Post Doc  
mentoring  
luncheon.



Faculty-to-Faculty  
Informal Mentoring  
Luncheon.



Dr. Shobha Bhatia



Dr. Karin Ruhlandt



Dr. Marina Artuso

## Message from the Directors

Earth Sciences Chair Cathryn Newton, along with the Directors of Women's Studies Diane Murphy and Priti Ramamurthy, first submitted a proposal for a Women in Science and Engineering program at Syracuse University in fall 1996. Although the proposal was not funded, they continued to work on the program over the next year. In fall 1997, the Senate Committee on Women's Concerns recognized the scarcity of women faculty in the sciences, mathematics and engineering. Deans Bogucz (Engineering & Computer Science) and Jensen (Arts & Science) appointed Drs. Shobha Bhatia and Cathryn Newton as co-facilitators of the WiSE project.

During the next year, the two women researched similar programs at other universities and met with several female faculty members to begin forming the program. In the end, they decided on three key elements to focus on: increased recruitment and retention of women faculty in sciences, mathematics, engineering, and computer sciences; a campus-wide lecture series that would bring distinguished women in these fields to Syracuse University; and, an advising and mentoring program where female faculty

assist students beginning research projects in the lab or in the field. Activities and programs began in 1999.

In the twelve years since, WiSE has progressed from a lightly funded, all volunteer effort to an institutionally supported and professionally staffed organization reaching undergraduate and graduate women in STEM as well as women STEM post doctoral fellows and faculty. Since 2008 two additional programs have been developed, the Future Professionals Program (WiSE-FPP) and a faculty and post doctoral fellows mentoring program.

Working as a substantial partner with the Chancellor and Provost, WiSE leadership helped secure a National Science Foundation ADVANCE/Institutional Transformation cooperative agreement in October 2010. SU-ADVANCE, as it is now called, is designed to build an inclusive, connective corridor for the next generation of faculty. Two members of the WiSE leadership team, Bhatia and Ruhlandt, were part of the core authors and are now co-PIs. Research conducted by WiSE, including a comprehensive assessment of climate and campus resources for women STEM faculty, cradled the successful award.

Today, WiSE provides expertise on SU Women STEM faculty's interests and concerns and sustains the WiSE faculty community creating a platform for SU-ADVANCE's success. WiSE continues to address the full pipeline with programs for women STEM undergraduates, graduates and post doctoral fellows.

Still largely operated by dedicated women faculty, WiSE continues to be a responsive community offering a consistent voice for women in STEM. It has garnered the support of administration and male colleagues reaching STEM women in thirteen departments on campus. We are proud of the growth in services and the impact WiSE has had on women students, post doctoral fellows, faculty and the broader community of Syracuse University. We are truly grateful for the generous support and sharing of time and talent by so many on campus. Now our thoughts must look to the future and our next steps.

Sincerely,

**Shobha Bhatia**  
(Co-Founder and Director)  
**Karin Ruhlandt**  
(Co-Director)  
**Marina Artuso**  
(Co-Director)

*“Hearing you talk this way and attending your events, keeps me confident about the value that comes from taking the time to get people together to share common challenges and brainstorm solutions.”*

~ WiSE Faculty Member

**We wish to particularly thank Chancellor Cantor and Provost Spina for their generous personal and financial support. They are true champions and catalysts fostering persistence and facilitating success for women in science, technology, engineering and mathematics.**

## Encouraging Persistence of Undergraduate Women in STEM

### Norma Slepecky Undergraduate Research Prize



*Professor Norma Slepecky was only 57 years old when she died on May 2, 2001. She was a professor at SU in the College of Engineering*

and Computer Science, a distinguished auditory neuroanatomist, and a member of the Institute for Sensory Research. Dr. Slepecky was a passionate researcher and an advocate for undergraduate student research. She hoped that her legacy would continue to encourage young women to conduct research. Each year, WiSE awards a prize to an undergraduate woman in her honor. Since 2004 WiSE has awarded almost \$7,000 in prizes to 16 young women in STEM. In the last 3 years, Dr. Linda Ivany has chaired the event with help from colleagues who review submittals and recommend awardees. There have been 5 prizes awarded during this time. In the last 3 years first prize awards went to:

**Caitlin Keating-Bitonti 2009**

Advisor: Linda Ivany, Earth Sciences  
 Research: *How Warm was the Early Eocene? Paleotemperature Reconstructions for the U.S. Gulf Coast from the Shells of Venericardia (Bivalvia)*

**Jessica L. Ebert 2010**

Advisor: Charles Driscoll, Civil and Environmental Engineering  
 Research: *The Dynamics of Hydrology and Mercury in Onondaga Creek During Storm Events*

**Kristin Waller 2011**

Advisor: Dr. Charles Driscoll, Civil and Environmental Engineering  
 Research: *Recovery over TIME: The Long-term Response of Lakes in the Adirondack Region of New York to Decreases in Acidic Deposition.*



*Professor Charles Driscoll on right with Kristin Waller.*

#### Slepecky Prize Awardee Update

Continuing to work with her advisor and mentor SU Professor Linda Ivany (left), Norma Slepecky prize winner

**Caitlin Keating-Bitoni** (right) is studying the Earth's



temperature approximately 50 million years ago when CO<sub>2</sub>

concentrations were higher than today. The results may shed light on what to expect in the future if CO<sub>2</sub> levels keep rising. The study, which for the first time compared multiple geochemical and temperature proxies to determine mean annual and seasonal temperatures, is published in the journal *Geology*, the premier publication of the Geological Society of America. Caitlin recently completed a master's degree in geology at the University of Wisconsin and will be continuing her doctoral studies at Stanford University. Dr. Slepecky would be proud to know that her legacy has indeed made a difference for young women scientists and engineers.

## Undergraduate Research Opportunities Help Support the Pipeline

Opportunities to participate in research as an undergraduate helps to clarify a student's interest in research and encourages those who hadn't anticipated graduate studies to consider Ph.D. studies, according to a NSF sponsored study by Susan H. Russell, Mary P. Hancock and James McCullough. In this nationwide survey of over 15,000 undergraduates it was found that research opportunities increased understanding, confidence

and awareness. Specifically, students:

- Learned how to conduct a research project,
- Increased confidence in research skills; and,
- Increased motivation to pursue graduate school.

The duration of the research experience and the variety of the research activities positively influenced

student outcomes. Undergraduate research is clearly a key to increasing the pipeline of women pursuing STEM graduate studies. WiSE is currently exploring ways to further help undergraduate women to participate in research opportunities.

Russell, S.H., Hancock, M. P. and McCullough, J. (2007). Benefits of undergraduate research experiences. *Science*, 316; 27 April 2007. Available online from [www.sciencemag.org](http://www.sciencemag.org).

## Encouraging Persistence of Undergraduate Women in STEM

### WiSE Learning Community; A Gateway to Success

By living and learning together in the WiSE Learning Community, freshman and sophomore women in science and engineering build a strong sense of community that supports their academic and professional career for years to come. Linked by the central theme of science and engineering, the WiSE-LC helps students:

- Transition successfully from high school to college.
- Increase academic achievement and persistence.
- Build leadership and team skills.
- Participate in mentoring opportunities with faculty and professionals.
- Establish friendships with peers who share the same interests.

Students living in the WiSE-LC participate in formal and informal learning opportunities such as study groups and invitations to special guest lectures. Social activities connect residents with each other and with student organizations such as the Society of Women Engineers that share similar interests. In addition the LC residents participate in general WiSE events getting to know STEM faculty and graduate students. They also take part in community building activities



**Dr. Costello Staniec (left) and LC member.**

that make a difference such as nurturing the passion for science and engineering in high school women and other volunteer service opportunities.

Since its inception in Fall 2000 the WiSE—LC has been home to over 200



women undergraduates. For the last three years this program has been led by WiSE Faculty Leader Professor Andria Costello Staniec. It has served 54 students from 10 different STEM departments of the College of Engineering and Computer Science and College of Arts & Sciences. Research has shown that learning communities increase shared knowledge, maximize active learning and help students unite around shared experiences. The support network developed often extends beyond the first year of college.

**Natnapin (Nat) Tangpipith**, a junior in Civil and Environmental Engineering was a resident of the WiSE—LC in 2009-2010. Nat, third from the left, is featured in the picture above with her current roommates and dorm neighbors. These young women have formed a vital social network for living and learning from their time in the

WiSE—LC as freshman. Nat feels that the LC increased her ability to succeed by helping her stay focused, avoid freshman year distractions and gain access to vital informal information. It was also easier to be with people who had the same academic demands. She

keenly remembers one key experience with a guest mentor, Dr. Gina Lee-Glauser, who is now the VP for Research. Nat learned that SU will provide her with the tools she needs to be an engineer but what she does with those tools and the quality of her success is up to her. Nat has taken that advice to heart. Recently she applied for and received a Scholarship in Action Merit Award for her junior year. This past summer, Nat participated in a NYS Department of Transportation (DOT) internship working on the Alexander Hamilton Bridge Rehabilitation project; the largest project undertaken by New York State Department of Transportation.

New for 2011-2012, Residence Life has created the Science, Technology, Engineering, and Math (STEM) Residential College located in Shaw

## WiSE Learning Community continued...

Hall. The STEM Residential College is composed of the WiSE—LC and four other STEM learning communities. With this change, STEM women undergraduates have even more access to each other and more choices. The WiSE—LC enrollment reflects these opportunities and is currently home to 8 students. Over the

coming year, WiSE will be assessing how we can best serve the women in the STEM Residential College rather than focusing on one particular group. In addition we are looking at ways to impact women STEM students through existing student organizations and increasing research opportunities.

*“It was nice meeting people who share the same passion as I do. Even though we all come from different places and different backgrounds, we still were able to share common ground in this learning community”*

- LC Member

*“I have found the WiSE - LC experience to be one of the reasons that I fell in love with my major.”*

- LC Member



WiSE 2011-2012 Learning Community Members

## Making a Difference

Learning community residents participate in group activities that build teamwork, leadership, inspire passion for math and science and make a difference in the lives of others. For example, in October 2010 the WiSE Learning Community students rallied to organize and run a program for high school girls who came to campus for the Sonya Kovalevsky Festival. The high school participants greatly appreciated the efforts of the Learning Community women as well as the opportunity to tackle projects new to them alongside college students. One young high school girl from the 2010-2011 event said, “This was very fun and the girls were awesome! I would like to be in an organization like WiSE.” And another said, “It was really cool to talk with college students and it was my favorite part of the day.” In other years students have participated in fundraisers like *Relay for Life* which is a 12-hour relay benefitting American Cancer Society, and worked with inner city youth to celebrate Halloween.



**LC Residents work with Syracuse City High School students during the annual Sonya Kovalevsky Festival.**



**Taking a break during the Relay for Life.**



**LC members carving Pumpkins to give away to youth in the community.**

## Supporting Persistence in Graduate Students: Future Professionals Program



2008-2009



2009-2010



2010—2011



2011—2012

The Women in Science and Engineering Future Professionals Program (WiSE-FPP) started as a collaborative endeavor between the Graduate School and Colleges of Engineering and Computer Science and Arts and Sciences in 2007-2008. At the end of its fourth year, WiSE-FPP is an active and growing program. Primary efforts are concentrated on augmenting the skills, competencies and capacities of women STEM students. Goals include improving women's access, achievement and endurance in STEM fields and disciplines. The contributing value of WiSE-FPP is underscored by the persistent underrepresentation and resulting tensions surrounding women graduate students working towards professional and academic careers in sciences and engineering.

WiSE-FPP was conceived at the intersection of two major gaps in academic support services: the lack of attention to the professional development of graduate students in STEM disciplines, and a dearth of knowledge and action aimed at dismantling gender based inequalities and increasing resiliency for women graduate students. In regards to the former, WiSE-FPP focuses on developing professional skills for students seeking employment either in industry or at research universities. This focus differs from an existing program administered by the Graduate School that largely

provides support for students seeking academic career paths especially teaching in higher education. While valuable to many, this and other existing programs do not address the particular needs of students who intend to pursue research-based STEM careers in industry, government and other sectors. The second gap addressed by WiSE-FPP focuses on the lack of attention to the different challenges that confront women STEM scholars both inside and outside of academia. In this regard, WiSE-FPP offers programming that helps STEM women to address the multiple and competing demands and enlists the support of experienced women faculty to guide and mentor WiSE-FPP associates. Mentorship addresses the subtleties of effective practices and engagement that are increasingly necessary for career success. These include career mapping and job searches, networking, communication, teamwork, self-awareness and evaluation, and conflict management. By gaining competence in each of these domains, women doctoral students can address the challenges created by the pervasive masculine norms and values that have taken shape in STEM. Women students are often thus disadvantaged not by an inequality of opportunity but by an inequality of access that supports persistence and career success. WiSE-FPP uniquely seeks to provide STEM women doctoral students with the environment

and knowledge that builds upon their considerable talent and potential for success in STEM fields.

In the last three years, WiSE has offered a wide variety of programs and services including peer mentoring and informal opportunities for learning from each other and from women faculty. Formal workshops on professional writing, CV/resume creation and portfolio development are also a regular part of the program. It is often the panels of women professionals and academicians that gain the most appreciation from the

### WiSE—FPP Learning Outcomes

*Graduate Students will:*

- demonstrate understanding of the essential elements and quality standards for a professional portfolio
- make evident their ability in career preparation and planning via development of a professional portfolio and participation in FPP activities.
- enhance knowledge of dynamics that foster successful inclusion in research opportunities at SU and to persist towards her degree.
- demonstrate increased knowledge of the skills necessary for professional success.
- demonstrate the skills, attitudes and behaviors essential for developing and maintaining a career-related social network.

## In touch with former WiSE FPP Associate

**Rajani Muraleedharan-Sreekumaridevi** received her Doctoral degree in Electrical and Computer Engineering from LCS College of Engineering and Computer Science In August 2011. Her research focuses on cross layer design optimization and security protocols for sensor network and management using evolutionary algorithms.

While pursuing her graduate studies, Rajani was an active

participant in professional development programs. In 2008, Dr. Bhatia nominated her as a 2008 WiSE Future Professionals Program Associate. This program, she feels, exposed her to the rigors of academia, including work-life issues, and gained skills to address them. The numerous guest speakers provided guidance and first-hand knowledge that no other program or resource can provide. “The faculty, mentors,

staff and fellow members at WiSE,” according to Rajani, “contributed a major role in my aspirations for a better future.” Rajani is starting a post-doctoral position at the University of Rochester under the guidance of Dr. Wendi Heinzelman. Dr. Heinzelman recognized the caliber of Rajani’s research work, her active involvement in WiSE and other academic and professional organizations as her main hiring criteria. Rajani



attributes her success to her mentors and faculty at WiSE and SU.

### FPP Continued

FPP associates as they discuss the pressing concerns for women in STEM. One of our first associates from 2007-2008 recently wrote to us to say that “The work-life balance panel was interesting and something I’ve often reflected on.”

Another said, “The numerous guest speakers provided deep insight, guidance and first-hand knowledge that no other program or resource can provide.” Over the years WiSE-FPP associates have continued to appreciate their interactions with faculty and guest lecturers. They are eager to learn from those who have traveled the

path. WiSE FPP is also often a “safe space” where associates can ask questions unique to women students in STEM. They also enjoy the interdisciplinary interactions with peers. Many of the associates express some concern about their skills in networking. They would also like more time to get to know one another. WiSE FPP has increased such opportunities into the program.

STEM doctoral students are very busy people. One consistent challenge in providing this interdisciplinary program is finding a time that

the majority can meet. We address this barrier by offering a variety of days of the week and time slots as well as connecting students with other campus opportunities. WiSE faculty and staff also make themselves available.

Since its inception WiSE FPP has served a total of 69 different individuals for 1 or 2 years. The first year dropout rate is 25% mostly due to scheduling difficulties. The number of positions available for the 2008-2009, 2009-2010 and 2010-2011 academic years were 20, 21 and 28 respectively. International students average about 45% of those served. All 12 departments have referred at least one student. The majority of the associates come from the College of Arts & Sciences. This percentage has increased over time which is attributed to the differing sizes of the colleges and the responsiveness of junior faculty in Arts and Sciences who are nominating their doctoral students from the start.

Chemistry and Psychology Departments have nominated the most associates at 12 and 9 a piece. The Biology and Biomedical and Chemical Engineering Departments round out this leadership group with 8 referred associates each. Of the 55 different professors nominating associates since its inception, 20% have nominated 2 or more associates.

SU WiSE offers a unique and effective program for women doctoral students in STEM. With the continued support of faculty, we will improve and enlarge the program.

**“I have gained valuable information concerning the preparation of my resume and cover letter ..., as well as keeping track of this information in an appropriate and helpful way.”** ~ WiSE FPP Associate

Information	Year 2008-2009	Year 2009-2010	Year 2010 - 2011
<b>Total Served</b>	<b>20</b>	<b>21</b>	<b>28</b>
Percent PhD students	95%	95%	93%
Percent International	40%	48%	46%
Percent Engineering & Computer Science	35%	24%	21%
Percent Arts & Sciences	65%	76%	79%

## Creating a culture of success

### Virginia Valian Visit

In a report issued March 22, 2010 by the American Association of University Women (AAUW) with the support of the National Science Foundation found that even though women have made advances in the fields of science, math, engineering and technology (STEM), cultural biases and stereotypes still exist that act as roadblocks on their path to success. This stubborn trend of underrepresentation continues even as women pursue graduate degrees in science and engineering at nearly equal rates as men.

In the spring of 2010, WiSE invited Dr. Virginia Valian to spur campus discussions on gender equity and inclusion in STEM. Dr. Valian is one of the early leaders on this topic with her book, *Why So Slow? The Advancement of Women* (MIT Press, 1998; paperback, 1999). She remains a leading expert on gender equity in the academy. She spoke to faculty and students at various seminars, informal discussions and lectures. During the day each audience learned about gender schemas and how they impact gender equity on campus.

Valian began the day at breakfast with male STEM faculty to discuss male engagement in facilitating an equitable and inclusive academic environment. She discussed her recent research on letters

of recommendation and other points of potential bias in the recruitment process. The breakfast was followed with a group discussion with women faculty on how power and status are influenced by gender. A lunch was held with the Chancellor, Deans, and STEM faculty. After lunch, Valian met with women graduate students to discuss the key behaviors and experiences that will help facilitate their academic and career success. Dr. Valian's final session for the day was a public lecture titled "Why So Slow? The Advancement of Women in the Academy." During this lecture she discussed why so few women occupy positions of power and prestige.

Using an interdisciplinary approach, Dr. Valian exposed many of the often invisible factors that hinder women's success. The audience learned about gender schemas and how they impact gender equity on campus. Gender schemas are assumptions about each gender that we hold and utilize, consciously and unconsciously, to form opinions and guide our actions. They are the lens through



which we form working assumptions. Dr. Valian proposes that gender schemas skew our perceptions often causing both men and women to view women in ways that give them an accumulation of disadvantages and gives men the advantage. It is often not an issue of overt discrimination but one of many mole hills of disadvantage that create a mountain of unfavorable treatment.

***“Any single instance of bias is likely to be tiny, and someone might say, you're making a mountain out of a molehill. But mountains are molehills piled one on top of the other.”***

~ Virginia Valian

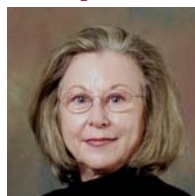


**Left: Professor Julie Hasenwinkel on left with Dr. Virginia Valian in the center and Professor Shobha Bhatia on the right.**



## Creating a culture of success

### Norma Slepecky Memorial Lectureship



Year	2009	2010	2011
Speaker	Dr. Ellen Martin	Dr. Susan W. Jerger	Dr. Catherine Badgley
Lecture	Growth of Ice Sheets on Antarctica: Climate Change 40 million Years Ago	Perceiving and Remembering Speech: Hearing Things Not as They Are, But As We Are	Feeding a Hungry Planet: Crisis and Opportunity
Institution	Associate Professor in Geology (paleoceanography) at University of Florida at Gainesville	Ashebel Smith Professor at the University of Texas in Dallas, School of Brain & Behavioral Sciences	Assistant Professor of Biology and Research Scientist in the Museum of Paleontology, University of Michigan

## WiSE Scholarship

**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*. 10(4): 174-184.**

**Abstract:** To address the attrition of women in engineering at the graduate level, the Women in Science and Engineering (WiSE) program at Syracuse University collaborated with the Graduate School and Colleges of Engineering and Computer Science and Arts and Sciences to create a program for women graduate students in science and engineering. This paper provides an overview of available data on women in engineering and of the barriers they encounter. It then discusses the authors' experiences with the WiSE Future Professionals Program (WiSE-FPP). Assessment data showed that WiSE-FPP provided a strong peer support network for program participants and gave the women an opportunity to engage with other women in STEM going through the same experiences. The peer mentoring offered by the program helped address barriers of isolation and the lack of successful role models at the graduate level.

**Alestalo, S., Alford, K., Cutler, D., Bhatia, S., and Ruhlandt-Senge, K. (2011) *Engaging male faculty in creating equity for women STEM faculty in academia*. Paper presented at the WEPAN National Conference, Seattle, WA.**

Clearly given the numbers, equity cannot be achieved without men STEM faculty. Focus groups were conducted at Syracuse University (SU) to help answer the question; what brings men faculty to the table as equally inspired transformation leaders? Findings can be categorized from individual, departmental and leadership perspectives. Men faculty were motivated by institutional competitiveness, the fit in terms of values, as well as personal experiences with partners and children. Many of the men participants held or were currently in leadership positions. These individuals found that the departments did not hold people accountable, encourage community thinking, nor reward positive behavior. Men faculty leaders found that addressing the barriers for men's involvement in fostering equity is not part of leadership training. They asked; how do they create an inclusive departmental environment? Is my own lack of awareness contributing to the problem? Women faculty in their focus group noted that departments that function as a whole not as individuals were more competitive (as compared to other departments) and productive. Building men faculty awareness of how the current status quo limits departments was considered to be important. Engaging men engineering faculty in collaboratively building environments that unleash the power of inclusive talent is essential to the competitive future of engineering departments.

The **American Society for Engineering Education (ASEE)** recently accepted an abstract for presentation by S. Miraglia, S. Bhatia and S. Alestalo at the annual conference held in June 2012. The title is **Women Becoming WiSE: Gender, Professional Development and Programming for Success**.

## Building a strong community for STEM

### WiSE International Symposium: *Networking Around the Globe*



Patricia Rankin, Marina Artuso, Sanae Iguchi-Arigo and Marc Sher at dinner



Professors Sane M.M. Iguchi-Arigo and Valerie J. Davidson during proceedings.



Professors Kimiko Fukuda and Maria Trigueros Gaisman



Professor Shobha Bhatia and Dr. Giovanna Beclich

There is a question repeated often in the academy today; one that has been asked for too many years and in too many countries. Echoing Virginia Valian 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 institutions of higher education around the world. Many different approaches have been pursued to facilitate a stronger presence of women in science and engineering professions with substantial investments from funding agencies, foundations, and diversity commissions across the globe.

The October 2010 WiSE international symposium at Syracuse University, *Networking Around the Globe*, brought together some of the world’s foremost STEM women faculty who presented research findings regarding the effectiveness of policies and practices in their home countries and institutions, innovative initiatives and transformative scholarship activities generated through the increased presence of women in STEM disciplines, as well as institutional and

leadership commitments aimed at leveling gender based inequalities in STEM fields. One gentleman scholar, Dr. Sher, presented information on the issue of dual career couples in academe. These presentations can be found under programs on our website [www.suwise.syr.edu](http://www.suwise.syr.edu).

There are very clear differences between countries in regards to the presence of and obstacles for women faculty in STEM disciplines. As Kumar (2001) notes, research institutions and universities in developing nations have greater numbers of women in STEM disciplines than their developed country counterparts. However, cross-national similarities are also a productive site of examination and analysis. Notably, women in STEM disciplines tend to face horizontal and vertical segregation in the academic marketplace nationally and globally (Maxwell, Slavin & Young 2001). Horizontally, STEM faculty women are concentrated in the lower echelons of the academic structure as assistant and non tenure-track faculty. Vertically, STEM faculty women are more likely to be employed in areas of science traditionally viewed

as feminine spheres of science or in those with fewer economic resources and impact thus lacking in prestige. Further, the ‘leaky pipeline,’ or attrition rates of women in STEM are also seen cross-nationally. While manifested and experienced differently, gender inequality in various contexts can be seen as the product of cultures dominated by masculine values about science and engineering, but also more broadly, gender inequalities are embedded in social, cultural and historical understandings of gender.

#### Distinguished Presenters

**Shobha Bhatia**, Syracuse University, USA

**Valerie J. Davidson**, University of Guelph, Canada.

**Giovanna Declich**, PRAGES project *Italian Assembly of Women for Development and the Struggle against Social Exclusion (ASDO)*;

**Kimiko Fukuda**, Tokyo Metropolitan University, Japan

**Sanae M.M. Iguchi-Arigo**, Hokkaido University, Japan

**Patricia Rankin**, University of Colorado, USA

**Marc Sher**, College of William and Mary, USA

**Maria Trigueros Gaisman**, Instituto Tecnológico Autónomo de México (ITAM), Mexico

***“I don’t see increasing the number of women in science and engineering as being desirable just from the point of view of social justice; I see it as being a necessity.... The more diverse a team is, the more approaches you have to problems, and the more chances you have of solving problems.” ~ Dr. Patricia Rankin, Symposium Presenter, Professor of Physics and Associate Vice Chancellor for Research University of Colorado Boulder***

## Building a strong community for STEM Faculty Mentoring and Support

Building a strong community for STEM women across disciplines and with other women scientists and engineers on campus and across the globe is one of the key strategies for WiSE. WiSE impacts individuals and the campus community through advocacy, networking, collaborative planning, consultation, and technical support. With small numbers in departments further defined by research emphasis, women STEM faculty often feel isolated professionally and socially. Critical informal exchanges and supportive connections become very limited in these circumstances. WiSE has from day one created a bridge to and among women faculty.

In the last three years WiSE has offered consultation and technical support to departments particularly in the recruitment of women faculty. For example, we assisted the Department of Mechanical and Aerospace Engineering in implementing a broader search to build a more diverse pool of candidates using innovative strategies. Furthermore, WiSE faculty leaders, at the department's request, have met with many women candidates during their campus interviews to help inform their decision with the information they need but often can't ask in an interview.

Informal technical support to women faculty included development of education plans, connecting to the community and feedback on

grants and other scholarship endeavors. For example, with a small allocation of funds and an introduction, Professor Becky Bader has developed a strong relationship with Girls Incorporated of CNY. Dr. Bader brings disadvantaged high school girls to campus to work with graduate students in the Syracuse Biomaterials Institute.

Annually, WiSE senior faculty meet over lunch with junior women faculty to share information about a variety of topics such as the annual update, promotion & tenure, classroom strategies, etc. Sponsored by WiSE in 2009 Dr. Meggin McIntosh, founder and director of Emphasis on Excellence, gave her workshop titled "Poised for Life...Poised for Success: Maintaining Balance and Equilibrium as a Woman in Academia." With over 25 women faculty, post-docs and graduate students in attendance, the workshop included interactive discussion and offered women across campus the opportunity to share their own challenges and approaches for finding balance. This workshop was well received with women noting their increased knowledge in assertive communication, time management and other areas. More recently Barbara Minsker, a professor of Civil and Environmental Engineering at University of Illinois Urbana-Champaign, spoke with women faculty, post docs and graduate students about re-connecting with their goals and personal needs to achieve work-life

balance.

WiSE often works with sister colleges. For example, WiSE and the College of Environmental Sciences and Forestry's Women's Caucus worked together to bring a variety of programs to both campuses. These have included joint panels on work-life balance, professional writing workshops and seminars to name a few.

In 2008-2009, WiSE orchestrated a campus wide assessment and exploration of various topics in preparation for writing the successful NSF ADVANCE Institutional Transformation grant. We met with women and men faculty, campus administrators and experts such as Diana Bilimoria from Case Western Reserve University and Virginia Valian of Hunter College. Both women played critical roles in the first cohort of universities to receive the Institutional Transformation awards and provided valuable feedback. In the summer of 2009, three focus groups were conducted to assess faculty opinions on moving forward with programs to address equity and inclusion in the STEM disciplines as well as benefits and challenges of academe-industry partnerships. The information gathered was beneficial for designing the program elements of the SU ADVANCE project. Much of the faculty development portions of WiSE's mission will now be shared with the SU-ADVANCE project. WiSE will continue to create forums for building community.



*"I really enjoyed and appreciated being in a group of women of varying career levels who understood and could speak to my experiences."*

*~ Jr. Stem Faculty*



## Supporting Persistence and Success for Women in STEM

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AT [SUWISE.SYR.EDU](http://SUWISE.SYR.EDU)

## Leadership

The WiSE leadership includes both dedicated veterans and new faculty. Shobha Bhatia and Karin Ruhlandt return as co-Directors for WiSE. Andria Costello-Staniec and Linda Ivany also return to their leadership roles for the WiSE Learning Community and the Norma Slepecky Undergraduate Research Prize and Memorial lecture respectively. Suzanne Baldwin and Susan Older continue in support of women STEM faculty, and doctoral students and post docs respectively. Joining us this year as leaders and mentors, especially to the Future Professionals and Post Doc Programs are Professors Kate Lewis, Amy Criss and Laura Lautz. Because of the generous funding support to WiSE, we are able to demonstrate our appreciation for the work these women do through small stipends for research and student outreach. Sharon Alestalo, Program Director provides professional leadership with the support of Sarah Miraglia, the new program assistant for the WiSE Future Professionals Program.

One of the most valuable aspects of WiSE is the peer-to-peer faculty mentoring and the faculty-to-student mentoring. In an atmosphere of respect and integrity, women can acquire the informal knowledge and relationships that allow them to go forth as WiSE women and leaders.

## What's Next? 2011—2014

The impact and scope of programs and services during the last three years has been substantial. In looking forward to the next three years we can see a clear path.

**T**he undergraduate mission of encouraging persistence towards their degree and beyond to graduate school remains of vital importance. Given campus changes we are proposing to implement programs for undergraduate women in STEM at the STEM Residential College and work closely with faculty and undergraduate women's student organizations in lieu of the Learning Community. We will place a greater emphasis on increasing involvement in research, pursuing grants and other funds for research training, hands-on experiences and scholarships. The Norma Slepecky Undergraduate Research prize will continue but with added elements that showcase a wider range of student's scholarly work.

**T**he very successful Future Professionals Program (FPP) has clear learning outcomes and proven programs for women graduate students in the areas of professional development and career/

academic support. WiSE will explore ways to reach more women students as well as incorporate a small co-ed program targeted at career preparation for international doctoral students. We targeted this area of need because a growing number of International students in WiSE-FPP has revealed a hunger for greater understanding of the US job search culture for professionals and resulting skill development. In addition, when WiSE-FPP opens a program to a wider audience, international students are eager participants seeking insight into American culture. Where relevant, Post-Docs will be included.

**W**e will continue to focus on producing scholarship and proposals. Long-term evaluation of the impact of WiSE-FPP on our alumni and current participants will undergird these efforts. As we gain a greater understanding of necessary refinements and emerging needs grant proposals will gain strength. We will also continue to share our knowledge of effective academic and professional support strategies for women science and engineering graduate students through publication.

**O**ur programs for post doctoral fellows have been met with mixed results over the last two years. Post docs are a more fluid population changing significantly from year to year. In some academic units they are integrated into the formal processes of the department and in others they are closely aligned primarily with their faculty sponsor or a particular research center. WiSE will seek ways to track incoming and outgoing post docs as well as devise an annual method for surveying immediate needs of the most current group in the academic year, developing a "just in time" approach to program design. In addition, there also is a need for a best practices mentoring plan template which is increasingly required by major funders.

**W**iSE will continue to work closely with SU-ADVANCE and STEM departments lending expertise and supporting activities. WiSE will also support women's faculty k-12 outreach activities and scholarship. Faculty-to-faculty events that build a strong campus community will be carried forward as well as WiSE scholarship activities.