

## Promising Practices for Improving the Inclusion of Women in Science, Engineering and Medicine: Lessons from Kuwait and the United States

### Session 2: Retention and Career Development of Women in STEM

*Session Chairs: Hayfaa AlMudhaf, KISR; Sonya Smith, Howard University*

A number of socio-economic factors continue to play a role in the evolving patterns in the participation of women in STEM workforce. The positive representation of women with STEM degrees, steers a women domination in the recruitment of young professionals in Kuwait. Although such pattern maybe visible in the Arab world, practices varies to the contrary in the US. This session will explore evidence of effective programs, practices, and models for retaining women and career development in science, engineering, and medicine. Discussion will tackle the main challenges facing working women in STEM & technology industry including:

1. Identify barriers that prevent women rising up the grades to the top.
2. Work environment: women working in male dominate technology industries.
3. Examine models of success for building the academic prowess, self-confidence, and leadership skills for women in STEM and medicine.



## **Changing the Trajectory: Women, Retention and Career Development in the Kuwait Oil Sector**

*Hosnia Hashim, Kuwait Oil Company, Kuwait*

Diversity is a goal cherished by modern organizations, as a proven way to boost productivity, ensure motivation of the Workforce, and enrich the internal workflows related to leadership, development and succession planning of the organization. The oil sector of the State of Kuwait pioneered the advancement of women in oil and gas in the Arabic Gulf, launching the Professional Women Network (PWN) of Kuwait Oil Company back in 2009, later on expanded to Kuwait Petroleum Corporation and its Subsidiaries in 2014.

The challenges that have been faced in the evolution of the initiative are related most importantly to unconscious biases, cultural setting, and resistance to change of the established style and corporate workforce, because of the clear aim of PWN to implement a new framework to enable the empowerment of women in all technical disciplines and support roles in the corporation.

Not all challenges have been surmounted, which is a commonality of all companies in Oil and Gas, where women are still a minority in the workforce. Nevertheless, and remarkably, 2018 finds an accomplished PWN that has piled up results of tremendous transcendence and outreach, which demonstrate the importance the initiative has had for all 3,100 women in KPC and its subsidiaries, in the up – and down-stream sectors of the oil industry in Kuwait.

My presentation Outline will cover:

- Gender Diversity in Oil and Gas Industry: Global outlook
- Challenges to attract female workers for Oil and Gas
- Female workforce in the Kuwait Oil Sector
- Pioneering initiative of Kuwait Professional Women Networking
- Professional Women Network Achievements
- Outlook of STEM distribution at Kuwait University
- Accelerating gender diversity

**Hosnia S. Hashim**

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Hosnia Hashim is an executive of the Kuwait oil sector, with a career shaped by a trail of successes. She was the first-ever woman appointed as a deputy managing director of an oil and gas asset producing 730,000 barrels of oil per day in the State of Kuwait, marking her a pioneer role model for women in the Middle East and the world. A Kuwaiti National, Ms. Hosnia earned a Bachelor of Science in chemical engineering from Kuwait University, and joined Kuwait Oil Company as a petroleum engineer.

She had held since then many key leading roles in the Kuwait oil industry such as Deputy Managing Director of West and North Kuwait Assets of Kuwait Oil Company (2005 to 2013), Vice President of Operations of Kuwait Foreign Petroleum Exploration Company (KUFPEC) and Deputy Chief Executive Officer Of Petrochemical Industries Company of Kuwait. In addition, Ms. Hosnia was the chair and the founder of the innovative Middle East initiative for the promotion of professional women, KOC Professional Women Networking (PWN), which seeks to advance women in the Kuwait Petroleum Corporation and its eight subsidiaries. Ms Hosnia received several international awards and recognitions and was ranked by FORBES as one of the “Most Powerful Top 30 Women in the world” (2014-2017). She is the co-author of the acclaimed book *Learned in the Trenches*, on leadership and resilience.

## **Influence of the Work Environment on the Inclusion of Female Faculty Members for Leadership Positions in Academic Body at Kuwait University**

*Alia H. Marafie, Kuwait University, Kuwait*

It is essential to understand the current status of females' participation as leaders in academia. Understanding the work environment of female faculty members would help to reveal the barriers of their inclusion in the leadership body in academia. The perspective of the colleagues and supporting team represents a critical source that would lead to this understanding. This study aims to shed light on the influence of the academic environment and other relevant factors associated with them on female inclusion in a leadership position in academic body at Kuwait University. The study targets both understanding the current status of females in their academic career and the female inclusion in a leadership position in academia.

### **Alia H. Marafie**

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Dr. Alia H. Marafie is an Assistant Professor in the Mechanical Engineering Department at Kuwait University (2005–present). She earned her BSc degree in mechanical engineering from Kuwait University (1996), MSc in mechanical engineering from The Ohio State University (2000), and PhD degree in mechanical engineering from The University of California, Irvine in (2005). Her research interests are in microfluidics, thermal sciences, and heat transfer in porous media. Dr. Marafie was the student advisor for the American Society of Heating, Refrigerating, Air-Conditioning Engineers (ASHRAE)–student branch in Kuwait (2007-2009) and was awarded “Student Branch Advisor of the Year 2008-2009”, in recognition of the year outstanding service and leadership in fostering the growth and strength of the Kuwait University Student Branch.



## Examples of Developing Healthy Grass-root Tech Initiatives in Kuwait that Address Challenges Facing Youth and Women in Technology

*Zainab AlMeraj, Kuwait University, Kuwait*

In late 2015, a few years after returning from nearly 12 years studying abroad, and after surveying the Kuwaiti tech scene for available support, opportunities and networks, I concluded that there were no organizations offering support to promising tech enthusiasts in terms of career guidance; training from beginner levels or those wanting to advance their skill set to an expert level.

In this talk I will present my own examples of effective and inclusive grassroots models that led to the growth of multiple tech communities that have met the needs of many. I will describe my experience with my tech chapter groups, student club and NGO and how I utilized them to identify challenges and barriers facing participation of youth, early career employees and women in tech. I will then show how these models open avenues to stronger communities and networks, contribute to research, personal growth, and entrepreneurship, in addition to realizing more focused career paths and ultimately a healthy and inclusive tech ecosystem.

**Zainab AlMeraj**

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Dr. Zainab AlMeraj is an Assistant Professor in the Information Science Department at the College of Life Sciences, Kuwait University. She is the founder of a tech grassroots initiative, Google Developer Group & Women Techmakers (GDG Kuwait), and a board member and head of the UN Reports Committee at RAWASI, an NGO with consultative status with the UN ECOSOC. She received a B.Eng in computer engineering (USA), and an MSc and PhD in computer science from the University of Victoria and University of Waterloo, Canada, in 2003, 2008 and 2013 respectively. Her research interests range between Human Computer Interaction (HCI) - usability and accessibility of mobile and web technologies in E-government, health informatics and education, computer graphics (CG), and mathematics, and how these areas can contribute to the advancement of technologies and if appropriate, human rights awareness. She is a member of the Association of Computing Machinery (ACM), and publishes and reviews in highly reputable international conferences and journals.

Dr. AlMeraj previously worked on promoting computer science and mathematics to women students across Canada and now in Kuwait. She's been building grassroots initiatives that create tech impact, empower youth, advance skills, and promote women in pursuing STEM careers. Her passion for volunteering stems from her desire to create positive change from the ground up and thrives on the advances she's made thus far. Her advocacy in human rights led to a shift of interest from her PhD research area to accessibility and usability. Dr. AlMeraj is now a certified professional in both Accessibility and Usability and aims to advance knowledge and skills of these two areas across the GCC region so companies built technologies, websites and applications that are easier to use for everyone including persons with disabilities.



## Women's Engineering Participation: What can we Learn from Jordan, Malaysia, and Tunisia?

*Julie Kmec, Washington State University, United States*

This talk will describe a multi-year, multi-site interdisciplinary study seeking to broaden women's engineering participation in the USA. To do so, the study looked outside of the confines of the USA to places where women have made inroads into the field: Jordan, Malaysia, and Tunisia. We held focus group sessions with women engineering undergraduate students, faculty, and practicing engineers affiliated with top engineering programs in each of these countries, asking women to elaborate on their engineering experiences. From these rich conversations, we identified key themes affiliated with women's engineering participation: identify, family, and curricular structure. This talk will describe in greater detail the motivation behind the study, the methodological procedures, and findings as they relate to the key themes.

### **Julie A. Kmec**

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Dr. Julie A. Kmec is a Professor of Sociology at Washington State University. Her research centers on the work people do and where they do it, including how workplace practices shape work experiences. She has published on a variety of topics including gender differences in work effort, the causes of managerial sex segregation, gender attitudes and their influence on work, sexual harassment at work, family caregiving penalties at work, and human resource practice effects on employment discrimination disputes. Her currently funded NSF project explores women's underrepresentation in engineering by looking outside of the US context to learn how to increase their share here. She is a member of the Washington State Academy of Sciences and recipient of the 2017 Sahlin Faculty Excellence Award for Instruction and the 2012 William F. Mullen Excellence in Undergraduate Teaching Award and regularly teaches undergraduate classes on research methods and social stratification. She serves as the Editor-in-Chief of the journal *Sociology Compass*.

## The Leadership Lab for Women in STEM: Advancing and Retaining Women through Professional Development

*Diana Bilimoria, Case Western Reserve University, United States*

In this presentation I will describe an innovative professional development program for women leaders in STEM careers. Drawing on our earlier research on women who persist in STEM professions, I will describe the goals, essential elements, design and content, and outcomes of the Leadership Lab for Women in STEM program which was launched as an annual program in 2014. We will conclude with the importance of creating unique developmental experiences for women in STEM industries.

### **Diana Bilimoria**

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Diana Bilimoria, PhD, is the KeyBank Professor and Chair and Professor of Organizational Behavior at the Weatherhead School of Management, Case Western Reserve University. She received her PhD in business administration from the University of Michigan. Her research interests focus on gender, diversity, equity and inclusion in governance and leadership, and organizational transformation. Her studies have helped corporate, educational, and nonprofit organizations reinvent themselves and establish practices that attract and retain a high-performance, diverse workforce. She is a co-author of multiple books including *Women in STEM Careers: International Perspectives on Increasing Workforce Participation, Advancement and Leadership* (2014) and *Gender Equity in Science and Engineering: Advancing Change in Higher Education* (2012). She served as the Chair of the Gender and Diversity in Organizations Division of the Academy of Management, and is elected to the board of governors of the Academy of Management. Dr. Bilimoria has published in leading journals and has contributed to several edited volumes. Recent awards she has received include the *Scholarly Contributions to Educational Practice Advancing Women in Leadership Award* from the Gender and Diversity in Organizations Division of the Academy of Management, the *Weatherhead School of Management Enduring Research Impact Award*, *Janet Chusmir Distinguished Service Award* from the Gender and Diversity in Organizations Division of the Academy of Management, the *Weatherhead School of Management Teaching Excellence Award*, the *Excellence in Higher Education Leadership Award* from the ACE Ohio Women's Network, and the *Weatherhead School of Management's Doctoral Teaching Excellence Award*.

## When a Promotion is Not the Same as Advancement: Women's Careers in Engineering and Management in US Tech Work

*Sharla Alegria, University of Toronto, Canada*

Computer science in the US has been especially resilient against efforts to recruit and retain women. This has been the case despite increasing representation in most other managerial and professional occupations. I focus on retention and career advancement for women in tech work, a computer science intensive field where women's representation has trended downward since reaching a zenith in the early 1990s and where "Neo-Taylorist" labor practices have shifted towards flatter hierarchies and more team-based work. I apply an intersectional lens to understand how gender and race together shape women's career paths in tech work. I find that white women, but not women of color, are promoted into mid-level management positions that do not provide pathways to executive leadership positions. These promotions are paradoxically a step down in terms of status relative to engineering work and they move women out of technical positions and towards business and management which has proven more open to women's participation than computing. I argue that increasing women's representation in STEM work requires attention to the shifting gendered off-ramps that emerge as diversity efforts succeed unevenly and emerging workplace practices shift traditional hierarchies.

### **Sharla Alegria**

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Sharla Alegria is an Assistant Professor of Sociology at the University of Toronto. Her research examines inequalities that persist when individuals and organizations embrace principles of equity. She has received funding from the National Science Foundation and her work has appeared in the *American Journal of Sociology*, *Gender & Society*, and *Ethnic & Racial Studies*.