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## WIAM – Women in Advanced Manufacturing Forum

**Forum Topic:** Advanced Manufacturing – The Diverse Next Generation

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**Date:** June 11, 2019 – Afternoon

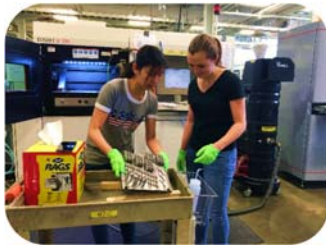
**Location:** Erie's Bayfront Convention Center, Erie, PA

**Sponsored by:** ASME Manufacturing Engineering Division (MED) and ASME Technical Events and Content (TEC) Sector Council

**Organizers:** Gloria Wiens (University of Florida)  
Maureen Fang (Lockheed Martin)  
Barbara Linke (University of California Davis)

**Website:** <https://event.asme.org/MSEC/Program/Women-in-Advanced-Manufacturing-Forum>

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**Description:** For its inaugural event, the Forum on Women in Advanced Manufacturing (WIAM) aims at showcasing successful career paths, discussing next generation technologies and gender gap in the field of manufacturing engineering (MfgE). The forum is organized by the Manufacturing Engineering Division (MED) and is being held during ASME's 2019 Manufacturing Science and Engineering Conference (MSEC) on June 11, 2019, in Erie, PA. The event will feature (i) panelist presentations from industry, government and academia, (ii) break-out sessions to discuss new opportunities for the diverse next generation in MfgE, and (iii) a networking reception. The expected outcome will be actionable recommendations to the MED leadership team.

The objective is to effectively and collaboratively increase gender inclusion and diversity engagement in MSEC as well as in MED members. The long-term goal is to achieve broader impacts from ASME to societal issues, e.g., a diverse MfgE workforce in U.S.

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### Program

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**Pre-Forum:** NAMRC/MSEC 2019, Tuesday Luncheon Keynote speaker – 12:30-2:00pm  
**Susan M. Smyth**, Chief Scientist for GM Manufacturing and Director,  
Manufacturing Systems Research – General Motors (retired)

**Session I (2:00-3:30 pm): Panel of Advanced Manufacturing Leaders**

**Technology Focus:** Industrial Internet of Things (IIoT), digital manufacturing, additive manufacturing, automation, robotics, Artificial Intelligence (AI), smart manufacturing

**Opening Remarks:** **Gloria Wiens** – University of Florida

**Panel Moderator:** **Maureen Fang**, Technical Product Manager – Lockheed Martin

**Panelists:** **Dianne Chong**, Recent Vice President for Research and Technology (retired) – Boeing Engineering, Operations & Technology  
**Tahany El-Wardany**, Fellow, Advanced Manufacturing – United Technologies Research Center

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**Victoria Fry**, Technical Solutions Executive – Autodesk, Inc.

**Teresa Malueg**, Antisubmarine Warfare Sensors (ASW) and Mission Systems Programs Director – Lockheed Martin Corporation

**Brigid Mullany**, ENG/CMMI: AM & LEAP HI Program Director – National Science Foundation / Professor – University of North Carolina at Charlotte

**Elisabeth Smith**, President & CEO – Acutec Precision Aerospace, Inc.

**Danielle Zeng**, Technical Expert in Materials and Manufacturing – Ford Research and Innovation Center

**Continuous Break:** ‘In-room’ forum break

**Session II (3:45-5:15pm): Creating Change and Shaping the Landscape of the Future in MfgE**

**Working session:** Audience participation in ideation of new pathways and opportunities for the diverse next generation in MfgE. To arrive at actionable recommendations for ASME MED leadership to act upon.

**Moderator:** **Crystal Morrison**, Founder & CEO – EverRise

**Closing Remarks:** **Barbara Linke** – University of California Davis

**Reception (5:15-5:45pm): Connecting for the Path Forward**

**Buses Depart (5:45pm):** Acutec – Precision Aerospace Inc. Conference Dinner & Tour  
*(buses will be waiting to transport the Forum’s participants to join the rest of the conference attendees.)*

**NOTE:** *For those planning to attend the Acutec Conference Dinner & Tour, there is a separate-additional \$15 bus transportation fee and advanced registration required due to Acutec security requirements.*

**Attendees:** \$5 Fee, plus conference registration required (*limited to 90 attendees*)  
For any questions, please contact WIAM Forum organizer, Gloria Wiens <gwiens@ufl.edu>

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**Travel Info:** <https://namrc47-msec2019.behrend.psu.edu/content/travel>

**Lodging:** <https://namrc47-msec2019.behrend.psu.edu/content/location-lodging>

**Registration:** <https://namrc47-msec2019.behrend.psu.edu/content/registration#overlay-context=content/home>

**WIAM Organizers, Moderators and Panelists, and NAMRC/MSEC Keynote Speaker Bios:**



**Dianne Chong**, Vice President for Research and Technology – Boeing Engineering, Operations & Technology (retired)

Dianne Chong, PhD, NAE, FSME, FASM, was the vice president in the Boeing Research and Technology organization in the Boeing Engineering, Operations & Technology organization. In this position, she led special projects that impacted processes and program integration for the Boeing Enterprise. Prior to this, Chong was the vice president of materials, manufacturing, structures and support in the Boeing Engineering, Operations & Technology organization. In that role, she led the organization responsible for development and support of manufacturing processes and program integration for the Boeing Enterprise.

Dr. Chong has been elected to the National Academy of Engineering and the Washington State Academy of Science for 2017. Chong has served as the St. Louis representative to Military Handbook 5 where she has chaired the Aerospace Users' Group and titanium casting group.

Chong is also serving on the ABET Board of Directors where she represents engineering. In that capacity, she leads the Engineering Area Delegation and supports the Engineering Area Commission. She supports ABET's Global Council and nominations and awards.

Chong is a member of TMS, AIAA, ASM International, SME, SWE, Beta Gamma Sigma and Tau Beta Pi. She has also been a member of the National Materials Advisory Board, served on the board of trustees, is a fellow of ASM International, and in 2007-08, served as the president of ASM International. She is currently the chair of the ASM Women in Materials Engineering Committee and serves on the ASM Action in Education Team. Chong is currently serving on the SME Board of Directors and is a fellow of SME.

She has been recognized for managerial achievements and as a diversity change agent. Chong was also recognized as an outstanding alumna of University of Illinois in 2006 and is the recipient of numerous technical and diversity awards. Chong has also supported National efforts by leading teams for NAE studies on manufacturing and through her service on the National Materials Advisory Board and the Defense Materials, Manufacturing, and Infrastructure group.

Chong received her bachelor's degrees in biology and psychology from the University of Illinois. She also earned master's degrees in physiology and metallurgical engineering. In 1986, Chong received her doctorate in metallurgical engineering from the University of Illinois. She also completed an executive master of manufacturing management at Washington University.



**Tahany El-Wardany**, Fellow, Advanced Manufacturing – United Technologies Research Center

Tahany El-Wardany, Ph.D., is Fellow, Advanced Manufacturing, at United Technologies Research Center (UTRC). As such, El-Wardany identifies and creates new technology areas in materials and manufacturing with widespread impact across United Technologies Corporation (UTC); develops capabilities in the fields of advanced manufacturing and elevator tribology; engages external networks to identify and support business development opportunities; and guides technical project work in advanced manufacturing. Previously, she served as Principal Engineer and a member of UTRC's Surface Mechanics Group, Physical Sciences Department.

During the course of her UTRC career, she has overseen development of novel manufacturing processes (hybrid/additive manufacturing/deep rolling manufacturing, high-speed machining); contributed to ARPA-E winning project proposals; matured methods to mechanically enhance aerospace alloy surface properties; and built 5-axis flank milling model and code for process optimization of numerous machining applications within UTC business units, which was ultimately licensed externally.

Her many awards and honors include winner of the 2015 Otis Safety Award; and a 2011 Connecticut Women of Innovation Nominee. Key appointments include Associate Professor, University of Alexandria, Egypt; Research Manager, Machining System Laboratory and Adjunct Professor, McMaster University, Canada; and Visiting Professor, Mechanical Engineering Department, Imperial College, United Kingdom. El-Wardany has published more than 100 peer-reviewed journal and conference papers and holds 21 patents and 40 patent applications in additive manufacturing, hybrid and conventional manufacturing, and the science of friction, lubrication and wear. She has been an invited speaker at many advanced manufacturing conferences, including the 2015 and 2018 National Academy of Science workshop on additive manufacturing modeling and online monitoring.

El-Wardany is a member of the Connecticut Academy of Science and Engineering (CASE), Society of Manufacturing Engineers (SEM), American Society of Mechanical Engineers (ASME), The Society of Women Engineers (SWE). She is editor of the *Journal of Applied Mathematics*, reviews multiple national and international journals in advanced manufacturing, and is a member of the editorial board of the International Scholarly Research Network Tribology. She holds undergraduate and graduate degrees in production engineering from the University of Alexandria, Egypt, and a Ph.D. in mechanical engineering from the University of Birmingham, UK.



**Maureen Fang**, Technical Product Manager – Lockheed Martin

Dr. Maureen Fang is technical project leader on submarine sensor and sonar team managing capital projects including design, procurement and implementation of new factory cells. She manages a new product project (\$70MM). She is responsible for day-to-day manufacturing operations including design work instructions, tools, fixtures, and test equipment. Fang incorporates lean six sigma initiatives on time and cost savings; and trains multiple disciplinary team members on the operation of use new equipment.

Fang is an experienced product manager with a demonstrated history of working in the Aviation & Aerospace, and defense industry. Skilled in product introduction, process development, project management, producibility, design for manufacturing and assembly (DFMA), failure analysis, FMEA, proposal creation, cost reduction, root cause and correct actions, lean manufacturing, six sigma, Geometric Dimensioning & Tolerancing, Project Estimation, Siemens NX, Volunteer Management and Lead Time Reduction. Her research interests are in design for manufacturing (DFM/DFx), digital manufacturing, digital thread, model based definition, and advanced manufacturing.

Prior to joining Lockheed Martin, Maureen was a mechanical design and manufacturing engineer at Pratt and Whitney. She then left Pratt and Whitney to pursue a PhD at Purdue University. In 2015 while pursuing her PhD, Maureen was awarded the 1<sup>st</sup> ASME Advanced Manufacturing Fellow at America Makes, the National Additive Manufacturing Innovation Institute. She worked for the deputy director of Education and Workforce. In this role, she managed the advisory board and roadmap development aimed in creating long-term strategic plans for advancing the next generation manufacturing workforce.

Maureen holds a BS in Mechanical Engineering from Clarkson University, MS in Mechanical Engineering from Rensselaer Polytechnic Institute, and PhD in Mechanical Engineering Technology from Purdue University.





**Victoria Fry**, Technical Solutions Executive – Autodesk, Inc.

Victoria Fry is a Technical Solutions Executive at Autodesk out of Silicon Valley. Victoria works with Autodesk's named account manufacturing customers to deliver business outcomes through technical solutions. Autodesk has over 130 different software titles spanning additive manufacturing and fluid simulation to visual effects for major motion films. Victoria leverages her technical background to understand and solve engineering challenges with her Fortune 5 customers. In 2016, she received one of two 'Excellence in Teamwork' awards for collaboration with R&D and manufacturing.

Prior to joining Autodesk, Victoria traveled the world licensing Chevron's hydroprocessing catalyst and technology to other oil majors.

Victoria holds a BS in Chemical Engineering from University of Nebraska. During university, Victoria worked with Exxon Mobil & Goldman Sachs.



**Barbara Linke**, Associate Professor – University of California Davis

Dr.-Ing. Barbara S. Linke is a faculty member of Mechanical and Aerospace Engineering at the University of California, Davis. She completed her Diplom (2002), doctorate (2007), and Habilitation (2015) at the RWTH Aachen University, Germany and worked as post-doc with Professor Fritz Klocke, Werkzeugmaschinenlabor (WZL), RWTH Aachen University and Professor David Dornfeld, University of California Berkeley. Her research interests include sustainable manufacturing, abrasive machining technologies, part quality, smart and data-driven manufacturing, among others. She has

published over 70 peer-reviewed papers, authored two books, edited a book and a proceedings, and is an active member of ASME MED and SME.

Barbara S. Linke received several awards, including the F.W. Taylor Medal of the CIRP in 2009, the Outstanding Young Manufacturing Engineer award of the SME in 2013, and the UC Davis College of Engineering Outstanding Junior Faculty Award in 2018.



**Teresa Malueg**, Antisubmarine Warfare Sensors (ASW) and Mission Systems Programs Director – Lockheed Martin Corporation

Teresa Malueg is the Antisubmarine Warfare Sensors (ASW) and Mission Systems Programs Director located in Syracuse, NY. She has responsibility for towed array, hull array, non-propulsion engineering and several additional ASW programs. In her prior role, Teresa was the Undersea Chief Engineer with responsibility for all undersea programs at the Syracuse site including towed arrays, hull arrays, non-propulsion electronics, mine warfare, and mission and unmanned systems.

Teresa holds a BS in Mechanical Engineering from Michigan Technological University as well as an MS in Mechanical Engineering from National Technological University. She started her career at Lockheed Martin as part of the Engineering Leadership Development Program and has moved through positions of increasing responsibility over time.

Additional roles within Lockheed Martin that Teresa recently held include being the RMS representative to the corporate Root Cause and Corrective Action board and technical liaison to Penn State focusing on continued and increased technical engagement with the University.



**Crystal Morrison**, Founder & CEO – EverRise

Dr. Crystal G. Morrison is a highly regarded scientist and leader who is passionate about developing people and organizations to their highest potential. She believes strongly that innovation is an act of leadership not just creativity. With extensive experience across industry, academia and national labs, Dr. Morrison knows what it takes to build and lead successful teams that create lasting value and bring products from concept to reality.

Dr. Morrison holds a Ph.D. in Macromolecular Science and Engineering and a B.S. in Chemistry. Following graduate school at the University of Michigan, Dr. Morrison was a Harold Agnew National Security Postdoctoral Fellow at Los Alamos National Laboratory (LANL) and later became a staff member, team leader and program leader before moving to Pittsburgh, PA. Since LANL, she has held successive leadership roles, including global R&D leader in a Fortune 500 company for 2 business units covering 77 unique market segments with over \$2.5B in annual sales. In 2018, Dr. Morrison converted her passion for people, technology and leadership into EverRise. EverRise is focused on uncovering and unleashing hidden potential in technical professionals and organizations to deliver growth and long-term sustainability.



**Brigid Mullany**, ENG/CMMI: AM & LEAP HI Program Director – National Science Foundation / Professor – University of North Carolina at Charlotte

Dr. Brigid Mullany is a Professor in the Department of Mechanical Engineering and Engineering Science at the University of North Carolina at Charlotte. Her undergraduate and graduate degrees are from University College Dublin Ireland. After completing her PhD in 2002 she accepted a two-year Marie Cure post doc position with Carl Zeiss in Germany, after which she took a position at UNC Charlotte in 2004. Her research focuses on surface finishing methods and surface evaluation.

Dr. Mullany is also currently a Program Director at the National Science Foundation in the Advanced Manufacturing Program within the Division of Civil, Mechanical and Manufacturing Innovation.



**Elisabeth Smith**, President & CEO – Acutec Precision Aerospace, Inc.

Since December 2014, Elisabeth has been the President and CEO of Acutec Precision Aerospace Inc. Acutec has grown over the last 30 years into one of the world's leading privately owned aerospace and power generation components and sub-assembly suppliers with a worldwide customer base, and facilities in Pennsylvania and South Carolina. In 2017, Acutec was ranked #1 in the aerospace industry by Aviation Week for valuing the individual. Ms. Smith is committed to a culture of teamwork, continuous improvement and harnessing technology to improve processes.

In 2015, she cofounded Lojic, a manufacturing software development spin-off specializing in IoT and application integration, reporting and dashboard implementation, as well as mobile app design and development.

Prior to joining Acutec, she was a consultant for the Aerospace and Defense practice of Charles River Associates (now Renaissance Strategic Advisors) and in the Operations Leadership Program (OLP) with United Technologies Corporation (now Collins Aerospace), holding positions at Pratt & Whitney, Hamilton-Sundstrand, and Sikorsky Helicopter, before becoming a manager on the Blackhawk HH-60M Medevac helicopter final assembly line for Sikorsky.

In 2016, Elisabeth was a STEP Ahead award winner, honored in Washington DC by the Manufacturing Institute for outstanding women in science, technology, engineering and production (STEP) careers. In 2018 Elisabeth was the first female winner of the Winslow Award, honoring an individual, group, business or industry that has made a significant contribution to the economic growth of the greater Meadville area.

She has a B.A. in Mathematical Economics from Haverford College, and MBA in Manufacturing Operations from the Tauber Institute for Global Operations at the University of Michigan. She has also completed Defense Policy Analysis coursework at George Washington University and the General Course at the London School of Economics.



**Susan M. Smyth**, Chief Scientist for GM Manufacturing and Director, Manufacturing Systems Research – General Motors (retired)

Susan Smyth, PhD, FSME, NAE, recently retired as the Chief Scientist for global manufacturing at General Motors and the Director of GM R&D Manufacturing Systems Research Labs. In this capacity, she directed the creation of GM's global manufacturing R&D strategies and oversaw innovation and implementation of its advanced manufacturing technology portfolio.

In this role at General Motors, Susan was responsible for manufacturing technology research and development enabling the production of world class vehicle and propulsion systems and driving innovations to enhance quality, efficiency and flexibility of GM's manufacturing systems. During her career at GM she held a variety of leadership positions in Manufacturing, Engineering, "Big Data" Analytics, and Research and Development.

Susan is recognized as one of the strategic technology leaders inside and outside General Motors. She served as Chair of the U.S. Manufacturing Council, which advises the Secretary of Commerce on government policies and programs that affect United States manufacturing. She was the GM Executive Representative and Chair of the Manufacturing Technology Leadership Council at the United States Council for Automotive Research. She has also served as executive technology advisor to a number of prestigious research institutes (University of Michigan, MIT, Georgia Tech, and Shanghai Jiao-Tong University, ...).

Dr. Smyth has been recognized for her technical and business achievements with multiple international awards. She was made a Fellow of the Society of Manufacturing Engineers in 2015, and was elected to the National Academy of Engineering in 2018. She also serves as an advisor to NSF (Directorate for Engineering).

She has a Bachelor of Science degree in Physics, a Master of Science degree in Optoelectronics and Information Technology, and a Doctorate in Physics (Queen's University of Belfast, Northern Ireland).



**Gloria Wiens**, Associate Professor – University of Florida

Gloria Wiens, PhD, is a faculty member of Mechanical and Aerospace Engineering at the University of Florida. Professor Wiens conducts research in the areas of intelligent and autonomous robotic systems, innovative mechanisms and controls for automation, space robotics/small satellites, manufacturing and micro-electro-mechanical systems. Her research projects have involved collaborations with National and International Laboratories (AFRL, SNL, NIST, NASA and CNR-ITIA/STIIMA) and industry (Comau, Fanuc Robotics North America, Ford). Currently funded by NSF/NRI 2.0, she is co-leading a multi-university/industry/multi-country collaboration on intelligent human-robot collaboration for smart factory.

In support of the Nation and the U.S. manufacturing community, Professor Wiens served as an ASME Foundation Swanson Fellow (2013-2015) and Assistant Director for Research Partnerships in the Advanced Manufacturing National Program Office providing coordination for the federal and public-private partnership teams supporting the Advanced Manufacturing Partnership (AMP 2.0), a steering committee under the President's Council of Advisors on Science and Technology (PCAST); and as a member of the Interagency Working Team which provides planning and coordination of federal advanced manufacturing activities, and develops policy documents for the National Network for Manufacturing Innovation Program (NNMI, now publically known as Manufacturing USA Program). In 2016-2017, Professor Wiens served as the FloridaMakes Director of Advanced Manufacturing at BRIDG, an industry-driven consortium in partnership with Florida's NIST/Manufacturing Extension Partnership (MEP). In 2016, she was awarded a United States Department of Commerce, Certificate of Appreciation – from Secretary Penny Pritzker.

She is a fellow of ASME, serving on ASME's Manufacturing Public Policy Task Force; Robotics Public Policy Task Force; Design, Materials and Manufacturing Segment Leadership Team; Technical Events and Content Council; and M. Eugene Merchant Medal of ASME/SME Board of Awards Committee.

She has Bachelor and Master of Science degrees in Mechanical Engineering (Kansas State University), and a Doctorate in Mechanical Engineering (University of Michigan).



**Danielle Zeng**, Technical Expert in Materials and Manufacturing – Ford Research and Innovation Center

Dr. Danielle Zeng is a technical expert in materials and manufacturing at Ford Research & Innovation Center. She specializes in advanced manufacturing processes and materials modeling method development for a variety of material systems such as aluminum, advanced high strength steels, polymers, and fiber reinforced polymer composites.

Dr. Zeng joined Ford Motor Company in 2003 and has co-authored over 50 technical papers. In recent years, she has been leading the effort to intensively develop the Integrated Computational Materials Engineering (ICME) tools for carbon fiber reinforced composites and the additive manufacturing process for lightweight and smart designed vehicles.

Her major awards include the Sydney H. Melbourne Award, the Henry Ford II Distinguished Award from the American Society of Automotive Engineering (SAE), the best paper award from the American Iron and Steel Institute (AISI), and she has received the Henry Ford Technology Award three times, the highest technical honor bestowed at Ford Motor Company.

Dr. Zeng is a member of the American Society of Automotive Engineering (SAE). She holds Master's and Bachelor's degrees in Engineering Mechanics from Tsinghua and Hangzhou University, China and Ph.D degree in mechanical engineering from the Ohio State University.