

Senate Commerce Committee Nominee Questionnaire, 117th Congress

Instructions for the nominees: The Senate Committee on Commerce, Science, and Transportation asks you to provide typed answers to each of the following questions. It is requested that the nominee type the question in full before each response. Do not leave any questions blank. Type "None" or "Not Applicable" if a question does not apply to the nominee. Return printed answers to Committee. Begin each section (i.e., "A", "B", etc.) on a new sheet of paper.

A. BIOGRAPHICAL INFORMATION AND QUALIFICATIONS

1. Name (Include any former names or nicknames used):

Laurie Ellen Locascio; Former name used: Laurie Ellen Brown

2. Position to which nominated:

Undersecretary of Commerce for Standards and Technology

3. Date of Nomination: July 20, 2021

4. Address (List current place of residence and office addresses):


Office: University of Maryland, 2133 Lee Building, College Park, MD 20742

5. Date and Place of Birth:

DOB: November 21, 1961
Place of Birth: Cumberland MD

6. Provide the name, position, and place of employment for your spouse (if married) and the names and ages of your children (including stepchildren and children by a previous marriage).

Spouse: N/A


7. List all college and graduate degrees. Provide year and school attended.

Ph.D. TOXICOLOGY, May 1999, University of Maryland at Baltimore, *summa cum laude*
M. Sc. BIOENGINEERING, June 1986, University of Utah, *cum laude*
B. Sc. CHEMISTRY, May 1983, James Madison University, *magna cum laude*

- 8. List all post-undergraduate employment, and highlight all management-level jobs held and any non-managerial jobs that relate to the position for which you are nominated.**

Vice President for Research, University of Maryland

Acting Principal Deputy Director to the NIST Director and Acting Associate Director for Laboratory Programs, NIST

Director, Material Measurement Laboratory, NIST

Division Chief, Biochemical Science Division, NIST

Group Leader, NIST

Contractor, University of Maryland

- 9. Attach a copy of your resume.**

Attached.

- 10. List any advisory, consultative, honorary, or other part-time service or positions with Federal, State, or local governments, other than those listed above, within the last ten years.**

Lawrence Livermore National Laboratory Physical and Life Sciences Directorate
External Review Committee: Member and Chair

Life Sciences Advisory Board, Maryland Department of Commerce: Member

National Science and Technology Council, Subcommittee on the Material Genome Initiative (Co-Chair, led and implemented first National Strategy, 2013-2015)

National Science and Technology Council, Subcommittee on Biological Defense Research and Development (2012)

Georgia Tech Research Corporation: Board of Trustees

Georgia Tech Applied Research Corporation: Board of Trustees

University of Maryland Enterprise Corporation: President

M Square Research Park Inc.: President

11. List all positions held as an officer, director, trustee, partner, proprietor, agent, representative, or consultant of any corporation, company, firm, partnership, or other business, enterprise, educational, or other institution within the last ten years.

Precision NanoAssembly LLC (Co-Founder) – 2021, in process of dissolving company

University of Maryland Enterprise Corporation (Chairperson and President) – 2017-present

M Square Research Park Inc. (Chairperson and President) – 2017-present

University of Maryland College Park Foundation Board of Trustees (Ex Officio Member) – 2017-present

Georgia Tech Research Corporation Board of Trustees – 2020-2021

Georgia Tech Applied Research Corporation Board of Trustees – 2020-2021

LGC Inc. Science Advisory Board (Chair) – stepped down on July 19, 2021

Association of Public and Land Grant Universities, Council on Research Executive Committee – 2019-present

Chemical and Biological Microsystems Society (Founding Director) – 2008-2011

World Materials Research Institutes Forum (President) – 2016-2017

American Chemical Society, Analytical Division (Chair) -2006-2008

U.S. Pharmacopoeia Council of Experts Nominating Committee - 2009

ASTM International Board of Directors - 2016

Global Biological Standards Institute Scientific Advisory Council -2014-2017

Analytical Chemistry (journal) Editorial Advisory Board – 2003-2005

12. Please list each membership you have had during the past ten years or currently hold with any civic, social, charitable, educational, political, professional, fraternal, benevolent or religiously affiliated organization, private club, or other membership organization. (For this question, you do not have to list your religious affiliation or membership in a religious house of worship or institution.). Include dates of membership and any positions you have held with any organization. Please note whether any such club or organization restricts membership on the basis of sex, race, color, religion, national origin, age, or disability.

National Academy of Inventors: Fellow and Member - 2020

American Institute for Medical and Biological Engineering: Fellow and Member

American Chemical Society: Fellow and Member – 2016-present

Council on Competitiveness, Technology Leadership and Strategy Initiative (TLSI), Working Group 1-Developing and Deploying at Scale Disruptive Technologies: Member and co-chair – 2019-present

Association of Public and Land Grant Universities, Council on Research: Executive Committee Member – 2019-present

Association of American Universities, Senior Research Officers' Steering Committee: Member - 2021

Sigma Xi: Member – 2009-2010, 2021

Social

Opus Yoga Studio

Yoga Bliss Yoga Studio

- 13. Have you ever been a candidate for and/or held a public office (elected, non-elected, or appointed)? If so, indicate whether any campaign has any outstanding debt, the amount, and whether you are personally liable for that debt.**

No.

- 14. List all memberships and offices held with and services rendered to, whether compensated or not, any political party or election committee within the past ten years. If you have held a paid position or served in a formal or official advisory position (whether compensated or not) in a political campaign within the past ten years, identify the particulars of the campaign, including the candidate, year of the campaign, and your title and responsibilities.**

None.

- 15. Itemize all political contributions to any individual, campaign organization, political party, political action committee, or similar entity of \$200 or more for the past ten years.**

None.

16. List all scholarships, fellowships, honorary degrees, honorary society memberships, military medals, and any other special recognition for outstanding service or achievements.

National Academy of Inventors: Fellow

American Institute for Medical and Biological Engineering: Fellow

American Chemical Society: Fellow

NIST Gallery of Distinguished Scientists

Washington Academy of Sciences Award, Distinguished Career in Sciences-Engineering Sciences, 2017

American Chemical Society National Award: Earle B. Barnes Award for Leadership in Chemical Research Management sponsored by the Dow Chemical Company Foundation, 2017

NIST Safety Award for leadership, 2016

Analytical Scientist-The Power List Top 50 Influential Women, 2016

ANSI Meritorious Service Award, 2014

Sigma Xi Distinguished Lectureship, 2009-2010

American Chemical Society Division of Analytical Chemistry Arthur F. Findeis Award, 2008

ASTM Distinguished Service Award, June 2006

U.S. Department of Commerce Silver Medal Award, November 2006

NIST Technical Achievement Award, October 2006

U.S. Department of Commerce Bronze Medal Award, November 1991

NIST Applied Research Award, 1993

National Tour Speaker for the Society of Applied Spectroscopy, 1993-1994

Certificate of Recognition, Department of Commerce, NBS, September 1990

Certificate of Recognition, Department of Commerce, NIST, September 1989

17. Please list each book, article, column, Internet blog posting, or other publication you have authored, individually or with others. Include a link to each publication when possible. Also list any speeches that you have given on topics relevant to the position for which you have been nominated. Do not attach copies of these publications unless otherwise instructed.

(archival journals)

1. Locascio, L. E.; Janata, J. "Integrated Systems for Potentiometric Stripping Determinations" *Anal. Chim. Acta* **1987**, *194*, 99-107.
2. Locascio-Brown, L.; Plant, A. L.; Durst, R. A. "Use of Liposomes in Flow Injection Systems" *Anal. Chem.* **1988**, *60*, 792-797.
3. Plant, A. L.; Locascio-Brown, L.; Brizgys, M. V.; Durst, R. A. "Liposome-Enhanced Flow Injection Immunoanalysis" *Bio/Tech* **1988**, *6*, 266-269.
4. Locascio-Brown, L.; Plant, A. L.; Durst, R. A. "Liposome-Based Flow Injection Immunoassay System, Accuracy in Trace Analysis-Accomplishments, Goals, Challenges" *J. Res. NIST* **1988**, *93(6)*, 663-665.
5. Durst, R.A.; Locascio-Brown, L.; Plant, A.L.; Brizgys, M.V. "Liposome Enhanced Flow Injection Immunoanalysis" *Clin. Chem.* **1988**, *34*, 1700-1701.
6. Plant, A. L.; Brizgys, M. V.; Locascio-Brown, L.; Durst, R. A. "Generic Liposome Reagents for Immunoassays" *Anal. Biochem.* **1989**, *176*, 420-428.
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8. Locascio-Brown, L.; Plant, A. L.; Durst, R. A. "Liposome Flow Injection Immunoanalysis: Implications for Sensitivity, Dynamic Range, and Antibody Regeneration" *Anal. Chem.* **1990**, *62(23)*, 2587-2593.
9. Plant, A.; Locascio-Brown, L.; Choquette, S.J.; Durst, R.A. "Interaction of Liposomes with Solid-Phase Antibodies" *J. Cell. Biochem. Suppl. 14 Pat B* **1990**, 366.
10. Plant, A. L.; Locascio-Brown, L.; Durst, R. A. "Immobilization of Binding Proteins on Monoporous Supports: Comparison of Protein Loading, Activity and Stability" *Appl. Biochem. Biotech.* **1991**, *30*, 83-98.
11. Yap, W. T.; Locascio-Brown, L.; Plant, A. L.; Choquette, S. J.; Horvath, W.; Durst, R. A. "Liposome Flow Injection Immunoassay: Theoretical Analyses of Competitive Immunoreactions Involving Univalent and Multivalent Ligands" *Anal. Chem.* **1991**, *63(18)*, 2007-2011.
12. Choquette, S. J.; Locascio-Brown, L.; Durst, R. A. "Planar Waveguide Immunosensor with Fluorescent Liposome Amplification" *Anal. Chem.* **1992**, *64(1)*, 55-60.
13. Locascio-Brown, L.; Chesler, R.; Kroll, M.; Plant, A. L.; Durst, R. A. "Determination of

- Theophylline in Serum by Liposome-Based Flow Injection Immunoassay” *Clin. Chem.* **1993**, *39*, 386-391.
14. Locascio-Brown, L.; Choquette, S. J.; “Immunosensing in FIA Using Liposome Amplification for the Measurement of Estrogens” *Talanta* **1993**, *40* (12), 1899-1904.
 15. Choquette, S.J; Locascio-Brown, L. “Thermal Detection of Enzyme Labelled Antigen-Antibody Complexes Using Fiber Optic Interferometry” *Sensors and Actuators B* **1994**, *22*, 89-96.
 16. Locascio-Brown, L.; Martynova, L.; Christensen, R.G.; Horvai, G. “Flow Injection Immunoassay using Solid Phase Entrapment” *Anal. Chem.* **1996**, *68*(9), 1665-1670.
 17. Roberts, M.R.; MacCrehan, W.A.; Locascio-Brown, L. “Behavior of Liposomes in Capillary Electrophoresis” *Anal. Chem.* **1996**, *68*(19), 3434-3440.
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 19. Locascio, L.E; Perso, C.E.; Lee, C.S. “Measurement of Electroosmotic Flow in Plastic Imprinted Microfluid Devices and the Effect of Protein Adsorption on Flow Rate” *J. Chromatography A* **1999**, *857*, 275-284.
 20. Branham, M.L.; MacCrehan, W.A.; Locascio, L.E. “Chemical Mapping of Imprinted Plastic Microchannel Surfaces using Group Specific Fluorescent Probes, *J. Capillary Electrophor. Microchip Technol.* **1999**, *6* (1/2), 43-50.
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 25. Johnson, T.J.; Waddell, E.A.; Kramer, G.W.; Locascio, L.E. “Chemical Mapping of Hot Embossed and UV Laser Ablated Microchannels in Poly(Methyl Methacrylate) Using Carboxylate Specific Fluorescent Probes” *Appl. Surf. Science.* **2001**, *181* (1-2), 149-159.
 26. Ross, D.; Johnson, T.J.; Locascio, L.E. “Imaging of Electro-Osmotic Flow in Plastic Microchannels” *Anal. Chem.* **2001**, *73*(11), 2509-2515.
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- with ESI-MS for High Throughput Drug Screening and Residue Analysis" *Anal. Chem.* **2001**, *73*(9), 2048-2053.
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- (book chapters and proceedings)**
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(opinion piece)

Why Science Depends on Diversity, *The Analytical Scientist* January 25, 2017,
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(publicly available videos)

- BioTalk with Rich Bendis, https://tunein.com/podcasts/Business--Economics-Podcasts/BioTalk-with-Rich-Bendis-p1023388/?topicId=163377203&utm_source=Publicate&utm_medium=email&utm_content=listen-to-biotalk-with-rich-bendis-on-tunein&utm_campaign=210611+-+EMAIL
- Enterprising Women of Commerce
<https://www.youtube.com/watch?v=CVN2MTtWYJQ>
- A Quantum Revolution: A Fireside Chat with Nobel Prize Winner Bill Phillips
<https://mqa.umd.edu/>
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- UMD-Thank you, Faculty, <https://umd.edu/research>
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- 2014 Biomanufacturing Technology Summit: Morning Session Introduction,
<https://vimeo.com/98489542>
- Innovate Maryland 2021, <https://president.umd.edu/inauguration/innovate-maryland>

PATENTS

1. Controlled vesicle self-assembly in continuous two phase flow microfluidic channels
Patent number: 9198645
2. Microfluidic apparatus to control liposome formation
Patent number: 8715591
3. Magnetic connectors for microfluidic applications
Patent number: 8337783

4. Fabrication method of topographically modulated microstructures using pattern homogenization with UV light
Patent number: 8236480
5. Method and device for generating diffusive gradients in a microfluidic chamber
Patent number: 8216526
6. Fluidic temperature gradient focusing
Patent number: 7029561
7. Surface charge modification within preformed polymer microchannels with multiple applications including modulating electroosmotic flow and creating microarrays
Patent number: 6982028
8. Method for microfluidic flow manipulation
Patent number: 6907895
9. Polyelectrolyte derivatization of microfluidic devices
Patent number: 6860980
10. Chemical modification of substrates by photo-ablation under different local atmospheres and chemical environments for the fabrication of microstructures
Patent number: 6703189
11. Liposome immunoanalysis by flow injection assay
Patent number: 5389523

18. List all digital platforms (including social media and other digital content sites) on which you currently or have formerly operated an account, regardless of whether or not the account was held in your name or an alias. Include the name of an “alias” or “handle” you have used on each of the named platforms. Indicate whether the account is active, deleted, or dormant. Include a link to each account if possible.

Facebook (active): <https://www.facebook.com/profile.php?id=1532527769>

Twitter (active): <https://twitter.com/lelocascio?lang=en>

Instagram (active): <https://www.instagram.com/lelocascio/?hl=en>

LinkedIn (active): <https://www.linkedin.com/in/laurie-locascio-37a91a9/>

19. Please identify each instance in which you have testified orally or in writing before Congress in a governmental or non-governmental capacity and specify the date and subject matter of each testimony.

June 28, 2017: House Committee on Science, Space and Technology
https://www.youtube.com/watch?app=desktop&v=vgpijQHdGbK&fbclid=IwAR3WyxIX-on-lLipAt97JNnKAhERI-CRQ17yZdkPWwVklOjI_Ako20J0mUk

20. Given the current mission, major programs, and major operational objectives of the department/agency to which you have been nominated, what in your background or employment experience do you believe affirmatively qualifies you for appointment

to the position for which you have been nominated, and why do you wish to serve in that position?

What in my background or employment experience affirmatively qualifies me for appointment to the position to which I have been nominated?

Vice President for Research (VPR) at a highly ranked tier one research university.

For the past four years, I have been responsible for **Leadership, Management, and Strategy** for the billion-dollar+, vibrant research enterprise at the University of Maryland (College Park and Baltimore campuses), and the first VPR responsible for managing the two campuses. In this role since 2017, some of the activities that I am responsible for include:

- Leading strategy for research at the University of Maryland as a core member of the President's cabinet;
- Leading the ramp-down and restart of all research activities during the COVID-19 pandemic at both campuses;
- Uniting two campuses under one research administration, and for the first time, combining research portfolios to catapult University of Maryland in the rankings of U.S. research universities to #14 research university in the country and #8 among public universities;
- Responsibly managing the flow and oversight of all funds coming into the university through grants, contracts and cooperative agreements (>\$600M on the College Park campus alone);
- Serving as Institutional Official overseeing research compliance activities including human subjects use in research, animal care and use, and conflict of interest (at College Park);
- Developing robust innovation, economic development and entrepreneurship activities (at College Park);
- Launching and managing the University of Maryland University-Affiliated Research Center (UARC), the Applied Research Lab for Intelligence and Security, as a trusted partner for the Department of Defense serving the intelligence community in areas that include countering malign influence/disinformation campaigns and supply chain disruption;
- Working with the U.S. Congressional delegation to promote research and provide input on new science and regulatory policy;
- Developing and growing partnerships with federal agencies around the core strengths for the two campuses; and
- Spearheading a new approach to business and corporate relationships and partnerships for the advancement of research.

These activities demonstrate the following experience and qualifications: increasing the public's awareness of the organization; increasing the research and innovation rankings of the organization; advocacy and leadership in diverse areas of research (quantum, space science, countering malign influence, climate science, etc); fiscal responsibility; management of compliance efforts including foreign influence; leadership of secure

facilities conducting classified research; professionalized approaches to business engagement, including improvement of technical transfer mechanisms.

Leadership positions at NIST, a premier federal science agency.

In my 31-year career at NIST, I held various positions including Acting Principal Deputy Director and Associate Director for Laboratory Programs (ADLP); Director of the Material Measurement Laboratory; Division Chief of Biochemical Science Division; Group Leader and Bench Scientist. As ADLP, I was responsible for **Leadership, Management, and Strategy** for NIST's seven Laboratory Directorates providing strategic direction and operational guidance for NIST's scientific and technical mission-focused laboratory programs. As MML Director, I was responsible for NIST's largest scientific Laboratory at that time with ~1000 staff members (permanent and non-permanent) in eight different locations around the U.S. (Gaithersburg and Rockville MD, Boulder CO, Charleston SC, Palo Alto CA, Long Island NY, Chicago, IL, Honolulu, HI) performing research and developing standards in the fields of chemical science, bioscience, and materials science and engineering. In these two roles, some of the activities that I was responsible for included:

- Led strategic planning for the NIST labs that included prioritization of four NIST strategic focus areas that are still in place today: AI, Quantum Information Sciences, Bioscience, and Internet of Things
- Managed the financial health of a vibrant organization with a \$170 M budget
- Established and managed effective cross-organizational programs increasing visibility and impact in areas of National importance that include: Materials Genome Initiative, synthetic biology, additive manufacturing and biomanufacturing
- Developed and enacted a plan for a total realignment of the MML organizational structure consistent with new mission and strategy
- Conceptualized and built the new Office of Data and Informatics to put MML at the forefront of the data revolution and compliance with federal requirements for open data
- Selected, hired and mentored new laboratory management, including Division Chiefs and Office Directors, assembling a team with talent, vision, and a desire to collaborate
- Provided strategic vision and direction, planned and selected priorities and areas for growth, and developed first strategic plan for MML, to provide exciting scientific, technical and operational goals to inspire and engage staff
- Developed plan for recruiting, retaining and hiring for technical and operational excellence with initial focus and success in developing partnerships with top tier universities to function as pipelines for a diverse and rich talent pool in areas of strategic importance
- Developed and guided new partnership with Stanford University for research in synthetic biology and genomics to help maintain U.S. industrial and academic leadership in the biotechnology/biomanufacturing sector
- Developed and guided new partnership with University of Chicago, Northwestern and Argonne National Labs to conduct research to support NIST's visible and

central role in the President's Materials Genome Initiative

- Oversaw the laboratory-wide performance system working with Laboratory leadership team to manage our staff for success
- Infused and supported a vital, healthy safety culture in MML with increased staff awareness, engagement and empowerment; develop innovative solutions (Hazard Review Database and iPad app) to effectively manage the Laboratory safety program
- Managed, improved, and modernized the NIST-wide service programs in data and reference materials to create an accessible and sustainable enterprise
- Actively participated as a member of the NIST senior leadership team developing lasting relationships for collaboration and transparency
- Represented NIST on various high-level committees including the following (to represent the breadth of activities): NSTC Subcommittee on the Material Genome Initiative (Co-Chair, led and implemented first National Strategy); NSTC Subcommittee on Biological Defense Research and Development; Global Biological Standards Institute Scientific Advisory Council; World Materials Research Institutes Forum; Committee on Science, American Chemical Society; ISO/TC229 Nanotechnologies, Environmental Health and Safety (International Convener, led development of consensus based standards); Organization for Economic Cooperation and Development Working Party on Manufactured Nanomaterials.

These activities demonstrated the following experience and qualifications: focus on organizational excellence; building diverse and inclusive culture resulting in increased staff engagement and higher productivity; strategic visioning, planning and effective implementation; developing public-private partnerships to maximize impact; global leadership in standards development; national leadership in priority areas for the federal government; collaboration with other agencies.

Leadership of international standards organizations.

I held two leadership positions within the ISO Nanotechnology standards committee (Technical Committee 229, Nanotechnologies, Environmental Health and Safety-U.S. Chair and Lead US Delegate/International Convener); participated in a working group to recommend the formation of a new committee in ISO focusing on biotechnology (Technical Committee 276); held a position on the ASTM Board of Directors; chaired an ASTM committee to develop the first standards for the collection of suspected biological agents in the aftermath of the anthrax attacks in Washington DC; and participated in the Organization for Economic Cooperation and Development to recommend best practices for manufactured nanomaterials.

These activities demonstrated the following: the negotiation of international standards to promote U.S. interests supported by strong and persuasive technical argument; the power of bringing together industry, federal leaders and academics to build a case to support U.S. industrial competitiveness; the importance of working with international partners to

ensure that truth in science is the dominant factor in the international standards process; the importance of unifying the federal response to a crisis.

The qualities that I have demonstrated include: persuasive and principled negotiation; national and international standards leadership; international cooperation.

Participation and Leadership of OSTP subcommittee.

As co-chair of the National Science and Technology Council Materials Genome Initiative Subcommittee, I was responsible for leading a multiagency committee to actualize the President's vision for the Materials Genome Initiative. I led the development of the first national strategy for this initiative with the overarching goal of drastically reducing the time from discovery to manufacturing of new materials. This fundamental materials science initiative was and still is critical to all U.S. industries- from transportation (space, automotive) to advanced electronics (semiconductors, quantum) to biotechnology (artificial organs, synthetic skin). In the committee, we also aligned federal budgets and programs to support its development across U.S. sectors.

I also participated in the NSTC Subcommittee on Biological Defense Research and Development as the NIST representative addressing the global threat of biological warfare.

These activities demonstrate the following experience and qualifications: uniting federal agencies under one vision and strategy; developing robust strategies to promote U.S. industrial advantages.

Participation in Council on Competitiveness.

The Council on Competitiveness is a non-partisan coalition of leaders from industry, academia and the national labs whose purpose is to advance policies to "jump-start productivity and grow America's economy." Over the past few years, I participated in the development of a report entitled "Competing in the Next Economy" which provides recommendations for ensuring U.S. competitive advantage. My role was as one of the co-chairs for the Technology Leadership & Strategy Initiative, which developed priority recommendations regarding innovation policies (strategic technologies, grand challenges) for inclusion in this report.

This experience was critical for my understanding of issues related to global competitiveness and international trade policy and critical investment, and also demonstrated the power of bringing together 50 Chief Technology Officers from multiple sectors to brainstorm on solutions for global innovation and, in particular, our current competition with China.

Why do I wish to serve in the position as NIST Director and Undersecretary of Commerce for Standards and Technology?

First, I believe that NIST is a gem in the federal scientific realm that punches far above its weight due to its pursuit of excellence in everything it does. I believe the NIST mission is vital: I know that the work done by this relatively small agency is central to global competitiveness. NIST scientists, engineers, and administrators work across the continuum from basic to applied scientific research. Their research has spawned new industries like quantum science and applied AI, and has elevated and cultivated advanced manufacturing in the U.S. NIST develops standards that underpin American success in international trade and support U.S. industries, including small and mid-sized companies. There is a sense of pride that NIST researchers and administrators have in knowing that the rigor of the science done there, grounds important decisions in truth. It would be an extraordinary honor to be trusted with the leadership of this leading scientific agency and to take it forward at this time when the power of science to change the world has never been so necessary and apparent. It is also a critical time in U.S. competitiveness where the strategies that we pursue and promote in all areas that are central to the NIST mission (research, manufacturing, and standards) will help solidify our future position in the global competition with China - an aggressive competitor in these areas.

Second, I believe in the power of public service. By being a public servant, you are given incredibly rich opportunities to solve some of society's greatest challenges. Public service empowers you to have very broad impact and contribute to creating and maintaining a quality of life in the U.S. that is unparalleled.

Third, I feel strongly that it is my duty to give back to a great organization with the talent, education, and experience that I have gained from being part of that organization. I was employed at NIST for 31 years, and it provided me with an incredible environment in which to learn, grow and excel. NIST supported me and nurtured my career at a time when being a woman and a leader in science was not well accepted. I have used that experience to build inclusive organizational cultures and to promote diversity and equity in science and scientific leadership knowing that success depends on everyone.

21. What do you believe are your responsibilities, if confirmed, to ensure that the department/agency has proper management and accounting controls, and what experience do you have in managing a large organization?

At NIST, excellence is a core value. This is often described as technical excellence, but while I was at NIST, we embraced a more wholistic value of organizational excellence. NIST must be a responsible steward of the taxpayer dollars with which it is entrusted. This includes operating transparently, incorporating proper financial controls and oversight, and conducting critical internal reviews of the personnel and processes. My role, as leader, is to ensure that these controls are in place and to actively manage those employees who are unable to perform effectively.

I encourage and empower employees to innovate in the business realm to improve administrative and business processes. Inefficiencies waste time and add administrative burden to those whom we expect to excel in technical and operational areas. My

expectation is that NIST will function in the most efficient and effective way possible, and I will manage under that guiding principle.

I have experience in managing several large organizations effectively in this manner. At the University of Maryland, I am responsible for managing federal grants and contracts flowing into, around, and through the university as subcontracts. At the College Park campus alone, awards in FY21 are anticipated to exceed \$650M; and double that when including the Baltimore campus. I also manage all other areas of research compliance including human subjects research, institutional animal care and use, conflict of interest, and foreign influence.

At NIST, as Director of the Material Measurement Laboratory, I managed an operating budget of ~\$170M spread across seven units with 1000 staff members in eight different locations. As Division Chief, I managed an operating budget of approximately \$20M across four units with 100 staff members in two different locations. I also managed other aspects of research compliance in my areas including research safety.

In all cases, I managed my financial resources responsibly, efficiently and effectively. In all cases, I was able to grow resources significantly while in the leadership role.

22. What do you believe to be the top three challenges facing the department/agency, and why?

I would respectfully suggest four key challenges that face NIST going forward:

Challenge #1: To successfully carry out NIST's responsibilities on behalf of the Department of Commerce to maintain U.S. leadership in critical industries and American manufacturing: the CHIPS for America Act and Advanced Manufacturing programs (Manufacturing USA and Manufacturing Extension Partnership).

NIST is positioned to play a central role in important initiatives to advance the U.S. economy and increase our global competitiveness. The CHIPS for America Act calls on NIST to "carry out a program of research and development investment to accelerate the design, development and manufacturability of next generation microelectronics." NIST experts have carried out a program of research, development and standards working closely with the semiconductor industry since the early days of microelectronics. This field was born in the U.S. and, as a Nation, we have been dominant players from the beginning. The rise of other players in this market have weakened our position in the past decades, and as this technology is integral to industries from defense to transportation, we are at a vulnerable point in history.

This act is a larger call to NIST to help cement the Nation's future position as a global leader in advanced electronics. This high-priority initiative has far-reaching implications and it will be critical for NIST to perform this work for maximum success, including translation to industry practices. NIST is absolutely driven by its mission to ensure national competitiveness and will be a conscientious, trusted, and unbiased leader for this effort. The challenge is in carrying out this duty so that the US is positioned for the next decades to

remain dominant in this domain while ensuring both the security of the global supply chain and the development of American supply chains, which are necessary for current and future semiconductor electronics. NIST is a trusted partner with industry and will make use of new and existing strong public-private partnerships and coalitions to build an all-hands-on-deck response to the CHIPS for America Act.

Challenge #2: To develop and implement a strategic approach to international standards to support the Nation's drive to increase innovation and competitiveness agenda.

NIST is the premier national metrology institute in the world and, as such, develops measurement standards (volume, mass, length etc.) that are used to ensure the quality and reliability of products, goods and services that are sold by U.S. companies across the globe. Among its peers around the world, NIST is the premier national metrology institute. Every employee at NIST understands that excellence in the research, measurements and products that we provide are key to the success of the Nation's current and future industries.

In the U.S., documentary standards are developed by organizations outside of NIST that include ASTM, IEEE, and others. NIST uses the expertise it has amassed through careful measurement science and interaction with industry to participate in and lead many national and international documentary standards committees that are managed by these independent entities and ANSI. Under the National Technology Transfer and Advancement Act, NIST is responsible for coordinating federal, state and local documentary standards activities so that the U.S. develops an effective portfolio of documentary standards to address industry's most pressing needs.

International documentary standards can be used to present trade barriers to other countries if they are developed in such a way that the standard methods require or prohibit the use of a technology or approach that one particular country has adopted in its own industrial practices. I have witnessed countries trying to force the use of their own technologies by incorporation into standards to the detriment of other countries, ultimately with the goal of impeding trade. When that happens, it is critical that the leader of the international standards committee stays abreast of any issues that could arise that could force out other technologies or approaches, or that are biased against good science. Strong technical and ethical leadership is required to manage international standards committees.

NIST has proven to be effective in safeguarding an approach to standards that is based on the best science in the world. In the current environment, this NIST role is even more essential as China aggressively works to gain positions of leadership in international standards committees that could tip the scales toward standards that favor Chinese technologies. Leveraging NIST's established credibility, we must respond to the threat from China with a strategy for international standards that will keep the US at the leading edge of industries of the future.

Challenge #3: To build a welcoming and inclusive environment within the agency that others want to emulate.

Many research publications show that a diverse and inclusive team is more creative, more innovative in research. From personal experience, I have found that a diverse group can produce the most interesting and creative solutions provided that all voices at the table respect and listen to each other. It is important for the leader to set those expectations in order to build a community that is not only diverse, but also welcoming, inclusive, and respectful.

We can create policies to ensure that equity and justice is first and foremost. We can create incentives to attract, promote and retain our diverse staff, faculty members and students. But until create a culture that welcomes all, where all voices are heard, and where we are united in our desire to work toward solving the national problem of inequity, we will not succeed. It takes strong leadership to tell that story, to address issues of social injustice, to speak openly, passionately and compassionately, and to engage everyone in the solution. A workplace that is known for its culture of inclusion will be the most coveted place to be. It will be an attracting force and will lead to success for everyone.

Throughout my career at NIST, I worked to develop a pipeline to create a diverse workforce. And I have promoted the success of that diverse workforce, encouraging and supporting women and people of color to aspire to leadership positions within the organization and externally. I consider it my duty to ensure that future leaders do not all look and think the same. Our different opinions, expressed and considered openly, are what make teams great, helping both individual and organizations to excel.

Like most scientific agencies, NIST does not have the most diverse workforce due to the limited pool of diverse applicants in the STEM fields. At NIST, I developed or managed several programs focused on creating a diverse pipeline and giving those who visited NIST a welcoming view into its incredibly impactful world of science. The agency must continue to be innovative in its approaches to attract a diverse talent pool and serve as a positive force that encourages young people to consider scientific and engineering fields.

Challenge #4: To improve the research infrastructure so that NIST is well positioned to support the Nation's most critical industries.

Like much of the scientific infrastructure in the U.S., the NIST facilities require significant upgrades and modifications due to their age. Most of the scientific and technical buildings on the NIST campuses are 50 years old or more with infrastructure that was designed for the equipment and applications of that era. NIST will play an important role in supporting the most exciting, cutting-edge industries of the future: quantum information science, artificial intelligence, biotechnology, advanced semiconductor research, advanced communications, and climate and environmental research. In fact, it was the pioneering work of NIST researchers that led to today's new quantum industry that we are now seeing, with companies and countries building capabilities and assets to capitalize on the coming quantum revolution. NIST researchers have proven that they can excel in the responsibilities given to them to lead in the critical areas of our future economy. However, there is a significant need to upgrade and update their 1960s-era infrastructure in order to meet their mission to drive the Nation forward in key technology areas.

B. POTENTIAL CONFLICTS OF INTEREST

- 1. Describe all financial arrangements, deferred compensation agreements, and other continuing dealings with business associates, clients, or customers. Please include information related to retirement accounts.**

Federal pension (FERS) from service at NIST.

University of Maryland Retirement Accounts:

- Fidelity Freedom Index 2025 Fund Institutional Premium Class
- T Rowe Price Retirement Trust 2030 Trust B

Eleven NIST-owned patents (no revenue generated at the current time)

- Patent number: 9198645
- Patent number: 8715591
- Patent number: 8337783
- Patent number: 8236480
- Patent number: 8216526
- Patent number: 7029561
- Patent number: 6982028
- Patent number: 6907895
- Patent number: 6860980
- Patent number: 6703189
- Patent number: 5389523

Formation of company, Precision NanoAssembly, Inc.: Precision NanoAssembly planned to license technologies from NIST (2 patents) and build instrumentation for manufacturing in the U.S. Because of conflicts with the position for which I am being considered, a new company - PrecNA LLC – was recently formed to license the NIST patents and act on the original business plan that was developed for Precision NanoAssembly Inc. The CEO of PrecNA LLC is a former colleague who recently retired from NIST. I am not associated with PrecNA LLC. The original company, Precision NanoAssembly Inc, is now being dissolved to remove conflicts associated with possible personal financial gain from the licensing of this technology by NIST to Precision NanoAssembly. I have not received any compensation from Precision NanoAssembly.

Do you have any commitments or agreements, formal or informal, to maintain employment, affiliation, or practice with any business, association or other organization during your appointment? If so, please explain.

No.

- 3. Indicate any investments, obligations, liabilities, or other relationships which could involve potential conflicts of interest in the position to which you have been nominated. Explain how you will resolve each potential conflict of interest.**

Precision NanoAssembly Inc is a company that I formed in partnership with other co-inventors to develop technology for biomanufacturing nanotherapeutics. The company planned to license the technologies from NIST (2 patents) and build instrumentation for manufacturing in the U.S. Because of conflicts with the position for which I am being considered, a new company - PrecNA LLC – was recently formed to license the NIST patents and act on the original business plan that was developed for Precision NanoAssembly Inc. The CEO of PrecNA LLC is a former colleague who recently retired from NIST. I am not, nor have I ever been, associated with PrecNA LLC. The original company, Precision NanoAssembly Inc, is now being dissolved to remove conflicts associated with possible personal financial gain from the licensing of this technology by NIST to Precision NanoAssembly.

NIST has several strategic partnerships with the University of Maryland through the Joint Quantum Institute, Center for Quantum Information and Computer Science, and the Institute of Bioscience and Biotechnology Research, as well as other smaller research relationships. For the required 2 years, I would recuse myself from making decisions that impact NIST or other Department of Commerce funding to the University of Maryland.

I have two outside paid consulting agreements with Lawrence Livermore National Laboratory and LGC, Inc. I understand that in my role as NIST director, I would have to sever those paid consulting agreements. I have already stepped down from my role at LGC Inc., and have informed Lawrence Livermore National Laboratory that I will step down following completion of the final report from our latest review (October 1, 2021).

I currently hold several positions on boards that I would agree to step down from due to potential conflicts of interest. These include: University of Maryland Enterprise Corporation, M Square Research Park Inc., University of Maryland College Park Foundation Board of Trustees, Georgia Tech Research Corporation Board of Trustees, Maryland Department of Commerce Life Sciences Advisory Board.

Other appointments that I hold with associations or honor societies will be continued.

- 4. Describe any business relationship, dealing, or financial transaction which you have had during the last ten years, whether for yourself, on behalf of a client, or acting as an agent, that could in any way constitute or result in a possible conflict of interest in the position to which you have been nominated. Explain how you will resolve each potential conflict of interest.**

Precision NanoAssembly Inc is a company that I formed in partnership with other co-inventors to develop technology for biomanufacturing nanotherapeutics. The company planned to license the technologies from NIST (2 patents) and build instrumentation for

manufacturing in the U.S. Because of conflicts with the position for which I am being considered, a new company - PrecNA LLC -- was recently formed to license the NIST patents and act on the original business plan that was developed for Precision NanoAssembly Inc. The CEO of PrecNA LLC is a former colleague who recently retired from NIST. I am not, nor have I ever been, associated with PrecNA LLC. The original company, Precision NanoAssembly Inc, is now being dissolved to remove conflicts associated with possible personal financial gain from the licensing of this technology by NIST to Precision NanoAssembly.

NIST has several strategic partnerships with the University of Maryland through the Joint Quantum Institute, Center for Quantum Information and Computer Science, and the Institute of Bioscience and Biotechnology Research, as well as other smaller research relationships. For the required 2 years, I would recuse myself from making decisions that impact NIST or other Department of Commerce funding to the University of Maryland.

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I currently hold several positions on boards that I would agree to step down from due to potential conflicts of interest. These include: University of Maryland Enterprise Corporation, M Square Research Park Inc., University of Maryland College Park Foundation Board of Trustees, Georgia Tech Research Corporation Board of Trustees, Maryland Department of Commerce Life Sciences Advisory Board.

Other appointments that I hold with associations or honor societies will be continued.

5. Identify any other potential conflicts of interest, and explain how you will resolve each potential conflict of interest.

None.

6. Describe any activity during the past ten years, including the names of clients represented, in which you have been engaged for the purpose of directly or indirectly influencing the passage, defeat, or modification of any legislation or affecting the administration and execution of law or public policy.

In the past 4 years in my role as Vice President for Research at the University of Maryland, I have advocated for University of Maryland priorities on these dates:

- February 7, 2018, Members of the Maryland delegation: Research on the Hill event - University of Maryland research and policy forum on Innovative and Objective Approaches to Bias-Free Policing

- March 5, 2018, Congressional office: Visit to IonQ , a UMD quantum spinoff, to discuss quantum priorities and quantum startups
- April 12, 2018, Members of the Maryland Congressional delegation: Advocating for quantum science and technology, and funding to build out the University Affiliated Research Center, the Applied Research Lab for Intelligence and Security, which serves the intelligence community focusing on issues including countering malign influence
- April 2, 2019, Members of Maryland Congressional delegation: Advocating for University of Maryland priorities including quantum
- May 23, 2019, Congressional office: Foreign influence in higher education and University of Maryland's response
- June 12, 2019, Congressional office: Advocating for quantum science and technology, and funding to build out the University Affiliated Research Center, the Applied Research Lab for Intelligence and Security, which serves the intelligence community focusing on issues including countering malign influence, and foreign influence in higher education
- Jun 19, 2020, Members of Maryland delegation: Terps on the Hill event- Inviting and celebrating Maryland alumni
- Nov 14, 2019, Members of the Maryland delegation: Advocating for quantum science and technology, and funding to build out the University Affiliated Research Center, the Applied Research Lab for Intelligence and Security, which serves the intelligence community focusing on issues including countering malign influence
- Jan 14, 2020, Congressional staff: Foreign influence in higher education
- January 31, 2020, Staff of the Senate Appropriations Subcommittee on Defense (Majority Member) and several other Congressional offices: Advocating for the Applied Research Lab for Intelligence and Security, which serves the intelligence community focusing on issues including countering malign influence
- February 7, 2020, Staff from the House Appropriations Committee, Subcommittee on Defense: Advocating for the Applied Research Lab for Intelligence and Security, which serves the intelligence community focusing on issues including countering malign influence
- Mar 23-24, 2021, Staff from Maryland Congressional delegation offices: Advocating for the Applied Research Lab for Intelligence and Security, which serves the intelligence community focusing on issues including countering malign influence
- Apr 9, 2021: Congressional office: Briefing on status of the Applied Research Lab for Intelligence and Security
- May 6, 2021: Staff from the Maryland Congressional delegation: Quantum briefing
- August 9, 2021: Senate office: Discussion of my NIST nomination and the role of international standards in competitiveness
- September 17, 2021: Senate office: Discussion of my NIST nomination and the importance of promoting DEI in science and technology

In the past 4 years in my role as a representative of higher education through affiliation with the Association of Public and Land Grant Universities, I have advocated on these dates:

- Feb 18, 2021, Staff from Senate Armed Services Committee: higher education priorities, including the Endless Frontiers Act.
- Feb 18, 2021, Senator Schumer and staff: higher education priorities including the Endless Frontiers Act.
- Feb 18, 2021, Congressional office: higher education priorities including the Endless Frontiers Act.

C. LEGAL MATTERS

- 1. Have you ever been disciplined or cited for a breach of ethics, professional misconduct, or retaliation by, or been the subject of a complaint to, any court, administrative agency, the Office of Special Counsel, professional association, disciplinary committee, or other professional group?**

No.

If yes:

- a. Provide the name of agency, association, committee, or group;**
- b. Provide the date the citation, disciplinary action, complaint, or personnel action was issued or initiated;**
- c. Describe the citation, disciplinary action, complaint, or personnel action;**
- d. Provide the results of the citation, disciplinary action, complaint, or personnel action. N/A.**

- 2. Have you ever been investigated, arrested, charged, or held by any Federal, State, or other law enforcement authority of any Federal, State, county, or municipal entity, other than for a minor traffic offense? If so, please explain.**

No.

- 3. Have you or any business or nonprofit of which you are or were an officer ever been involved as a party in an administrative agency proceeding, criminal proceeding, or civil litigation? If so, please explain.**

No.

- 4. Have you ever been convicted (including pleas of guilty or *nolo contendere*) of any criminal violation other than a minor traffic offense? If so, please explain.**

No.

- 5. Have you ever been accused, formally or informally, of sexual harassment or discrimination on the basis of sex, race, religion, or any other basis? If so, please explain.**

No.

- 6. Please advise the Committee of any additional information, favorable or unfavorable, which you feel should be disclosed in connection with your nomination.**

N/A.

D. RELATIONSHIP WITH COMMITTEE

- 1. Will you ensure that your department/agency complies with deadlines for information set by congressional committees, and that your department/agency endeavors to timely comply with requests for information from individual Members of Congress, including requests from members in the minority?**

Yes.

- 2. Will you ensure that your department/agency does whatever it can to protect congressional witnesses and whistle blowers from reprisal for their testimony and disclosures?**

Yes.

- 3. Will you cooperate in providing the Committee with requested witnesses, including technical experts and career employees, with firsthand knowledge of matters of interest to the Committee?**

Yes.

- 4. Are you willing to appear and testify before any duly constituted committee of the Congress on such occasions as you may be reasonably requested to do so?**

Yes.

(Nominee is to include this signed affidavit along with answers to the above questions.)


F. AFFIDAVIT

Laurie E. Locascio being duly sworn, hereby states that he/she has read and signed the foregoing Statement on Biographical and Financial Information and that the information provided therein is, to the best of his/her knowledge, current, accurate, and complete.



Signature of Nominee

Subscribed and sworn before me this 24th day of September 2021.



Notary Public

Evelyn Yahaida Rivera
Notary Public
Montgomery County
Maryland
My Commission Expires 03/17/2025



Laurie E. Locascio, Ph.D.

Address:

Cell Phone:

SUMMARY

Senior executive with a known track record of visionary scientific leadership and staff empowerment. Strategic thinker with a people-first attitude to build an environment for open, collaborative, and creative science inclusive of multiple disciplines, backgrounds, cultures and strengths. Strong managerial experience, high scientific stature, and excellent communication skills. Acknowledged leader who inspires confidence and engagement internally and externally through critical relationships and partnerships that maximize the impact of the organization.

PROFESSIONAL SUPERVISORY EXPERIENCE

2017-present: VICE PRESIDENT FOR RESEARCH
PROFESSOR, BIOENGINEERING, CLARK SCHOOL OF ENGINEERING (UMD)
PROFESSOR SECONDARY APPOINTMENT, PHARMACOLOGY, SCHOOL OF
MEDICINE (UMB)
University of Maryland
Supervisors: President Darryll Pines, University of Maryland College Park (UMD);
President Bruce Jarrell, University of Maryland Baltimore (UMB)

Leadership, Management, Strategy: for the billion-dollar+, expansive and vibrant research enterprise at the University of Maryland (UMD+UMB), and the first Vice President for Research responsible for managing the two campuses. In this role since 2017, responsible for:

- Leading strategy for research at the University of Maryland as a core member of the President's cabinet;
- Leading the ramp down and restart of all research activities under COVID19 pandemic at both campuses;
- United College Park and Baltimore campuses under one research administration for the first time; combined research portfolios under the NSF Higher Education Research and Development survey of institutions to catapult University of Maryland in the rankings of U.S. research universities to #14 research university in the country and #8 among publics;
- Developed strategy and helping to grow the University of Maryland research portfolio by ~15% in 2.5 y;
- Managing the flow and oversight of all funds coming into the university through grants, contracts and cooperative agreements;
- Developing approaches to capture and amplify the impact of Maryland research;

- Overseeing compliance activities including human subjects use in research, animal care and use, and conflict of interest (at UMD);
- Developing robust innovation, economic development, and entrepreneurship activities (at UMD);
- Launching and managing the Applied Research Lab for Intelligence and Security (a University-Affiliated Research Center (UARC)), as a trusted partner for the Department of Defense serving the intelligence community; supporting growth of the center from \$2M to \$40M entity in 3 y (*clearance through DOD*);
- Working with the U.S. Congressional delegation to promote research interests for Maryland and to provide input on new science and regulatory policy;
- Developing and growing partnerships with federal agencies around the core strengths for the two campuses; and
- Spearheading a new approach to business and corporate relationships and partnerships for the advancement of research.

2017:

ACTING PRINCIPAL DEPUTY to the NIST DIRECTOR and ASSOCIATE DIRECTOR FOR LABORATORY PROGRAMS

National Institute of Standards and Technology, Gaithersburg, MD

Supervisor: Dr. Kent Rochford, kbrochford@gmail.com (currently CEO, SPIE-international society for optics and photonics)

Leadership, Management, Strategy: for NIST's 7 Laboratory Directorates. As Associate Director for Laboratory Programs, provided strategic direction and operational guidance for NIST's scientific and technical mission-focused laboratory programs and served as principal deputy to the Under Secretary of Commerce for Standards and Technology and NIST director, among other duties.

2012-2016:

DIRECTOR

Material Measurement Laboratory (MML), National Institute of Standards and Technology, Gaithersburg, MD

www.nist.gov/mml

Supervisor: Dr. Willie May, willie.may@morgan.edu (currently Vice President for Research, Morgan State University)

Leadership, Management, Strategy: for NIST's largest scientific Laboratory with ~1000 staff members (permanent and non-permanent) in 8 different locations around the U.S. (Gaithersburg MD, Rockville MD, Boulder CO, Charleston SC, Palo Alto CA, Long Island NY, Chicago, IL, Honolulu, HI) performing research and developing standards in the fields of chemical science, bioscience, and materials science and engineering. From 2012-2016:

- Managed the financial health of a vibrant organization with a \$170 M budget
- Established and managed effective cross-organizational programs increasing visibility and impact in areas of National importance that include: Materials Genome Initiative, synthetic biology, additive manufacturing, biomanufacturing
- Developed and enacted plan for total realignment of MML organizational structure consistent with new mission and strategy
- Conceptualized and built the new Office of Data and Informatics to put MML at the

forefront of the data revolution

- Selected, hired and mentored new Laboratory management, including Division Chiefs and Office Directors, assembling a team with talent, vision, and a desire to collaborate
- Provided strategic vision and direction, planned and selected priorities and areas for growth, and developed first strategic plan for MML, to provide exciting scientific, technical and operational goals to inspire and engage staff
- Developed plan for recruiting, retaining and hiring for technical and operational excellence with initial focus and success in: developed partnerships with top tier universities to function as pipelines for a diverse and rich talent pool in areas of strategic importance
- Developed and guided new partnership with Stanford University for research in synthetic biology and genomics to help maintain U.S. industrial and academic leadership in the biotechnology/biomanufacturing sector
- Developed and guided new partnership with University of Chicago, Northwestern and Argonne National Labs to conduct research to support NIST's visible and central role in the President's Materials Genome Initiative
- Oversaw the Laboratory-wide performance system working with Laboratory leadership team to manage our staff for success
- Infused and supported a vital, healthy safety culture in MML with increased staff awareness, engagement and empowerment; develop innovative solutions (Hazard Review Database and iPad app) to effectively manage the Laboratory safety program
- Managed, improved, and modernized the NIST-wide service programs in data and reference materials to make into an accessible and sustainable enterprise
- Actively participated as a member of the NIST Senior leadership team developing lasting relationships for collaboration and transparency
- Represented NIST on various high-level committees including the following (to represent the breadth of activities): NSTC Subcommittee on the Material Genome Initiative (Co-Chair, led and implemented first National Strategy, 2013-2015); NSTC Subcommittee on Biological Defense Research and Development (2012-2017); Global Biological Standards Institute Scientific Advisory Council (2015-2017); World Materials Research Institutes Forum (Member and Chair, 2014-2017); Committee on Science, American Chemical Society (2012-2014); ISO/TC229 Nanotechnologies, Environmental Health and Safety (International Convener, led development of consensus based standards, 2011-2013); Organization for Economic Cooperation and Development Working Party on Manufactured Nanomaterials (2010- 2012).

2005-2011:

DIVISION CHIEF

Biochemical Science Division, Chemical Science and Technology Laboratory, National Institute of Standards and Technology, Gaithersburg, MD.

Supervisor: Dr. Willie E. May, willie.may@morgan.edu (currently Vice President for Research, Morgan State University)

Leadership, Management, Strategy, Accomplishments: for NIST's only bioscience division with ~125 staff members in 2 locations (Gaithersburg, MD and Rockville MD) performing research and developing standards in the bioscience field serving the healthcare,

environment, and manufacturing sectors. From 2005 to 2011:

- Managed the financial health of an organization with a \$20 M budget
- Grew the Division budget by 40% in 6 years and established strong programs in genomics, proteomics, cell analysis, and biomanufacturing
- Recreated the partnership with the University of Maryland at IBBR with a renewed commitment to build a world-class institution; established best in the world facilities for structural analysis of biotherapeutics
- Rebuilt morale and reenergized the division with new focus and strong direction
- Developed and enacted plan for realignment of Division structure with new management team that came together to drive division to new level of productivity and success
- Empowered staff, built renewed confidence, created environment of scientific excellence, removed barriers to collaboration, and rewarded positive actions and performance
- Established a strong safety program and built sustained safety culture
- Provided strategic vision and direction, planned and selected priorities and areas for growth, and developed first strategic plan for the Bioscience Division
- Developed plan for recruiting, retaining, hiring for scientific and operational excellence
- Oversaw the Division-wide performance system working with Division leadership team with a renewed commitment to manage our staff for success
- Represented NIST on various high-level committees including the following (to represent the breadth of activities): ISO/TC229 Nanotechnologies, Working Group on Environmental Health and Safety (U.S. Working Group Chair, led development of consensus based standards. 2007-2011); NSF Division of Chemistry Committee of Visitors (2009-2010); American Chemical Society, Division of Analytical Chemistry (Chair, led and implemented first strategic plan, 2006-2008); U.S. Pharmacopoeia Council of Experts Nominating Committee (2009); Bioanalytical Working Group, Consultative Committee for Amount of Substance (CCQM, 2008-2011); National Science Advisory Board for Biosecurity (2006); Biological Decontamination Standards Working Group (2006); DHS Sampling Standard Task Group on developing national standard for collecting suspicious powders (Chair, led development of consensus based standards, 2005-2006); Louisiana Science, Technology, Engineering and Mathematics (LA-STEM) Research Scholars Program, to increase diversity in the STEM disciplines (2005-2006); Chair, MicroTAS 2008 Conference, San Diego, CA (2008).

2002-2005: GROUP LEADER and RESEARCH BIOMEDICAL ENGINEER Microanalytical Metrology Group, Analytical Chemistry Division, National Institute of Standards and Technology, Gaithersburg, MD.
Supervisor: Dr. Stephen Wise (retired)

Leadership, Management, Accomplishments: for group of 13 staff members, postdoctoral researchers, guest researchers and graduate students performing research in microfluidics, including biological and bioanalytical applications of microfluidic systems. From 2002-2005:

- Established group with primary focus in microfluidics hiring a talented, diverse, and multidisciplinary team

-
- Built international technical reputation of the group as a leader in microfluidics
 - Managed the financial health of a group with a \$1.5 M budget
 - Provided technical vision, direction and strategy for the group resulting in innovative research, publications, and patents
 - Provided project management and conducted group performance evaluations managing staff for productivity, inclusion and engagement
 - Attracted financial support to build program: PI for external grants (DARPA, NIH, NIH); PI for three 5-year internal research grants
 - Developed relationships with industry; PI or co-PI on multiple CRADAs
 - Developed key collaborations with academic laboratories involving supervision of visiting students and guest researchers from universities including Stanford University, University of Michigan, University of Maryland, Cornell University, University of North Carolina, Northwestern University, Arizona State University to invigorate research
 - Established collaborations with 3 NIH laboratories to guide us toward the development of technologies to solve important medical problems
 - Mentored many postdoctoral fellows and students at the graduate, undergraduate and high school level developing the next generation of scientists and enriching research
 - Represented NIST research on various technical committees including the following (to represent the breadth of activities): Chair, Gordon Research Conference on the Physics and Chemistry of Microfluidics, Big Sky, MT, Oxford, England (2005); Vice-Chair, Gordon Research Conference on the Physics and Chemistry of Microfluidics, Big Sky, MT, August, 2003; Track Chair-MicroTechnologies, LabAutomation (2005); Organizing Committee Member, Micro Total Analysis Systems, Boston, MA, October (2005); Board Member, SIGMA XI, NIST chapter, (2003-2006); Organizing Committee Member, 5th Workshop on Biosensors and Biological Techniques in Environmental Analysis, Ithaca, NY (2002); DARPA Review Panel, Bio:Info:Micro Program (2002); NSF Panel- The Challenges of Chemical and Biological Sensing (2002).

1986-2002: GROUP LEADER (1993-1995) and RESEARCH BIOMEDICAL ENGINEER (1986-2002) Molecular Spectroscopy & Microfluidic Methods Group, Analytical Chemistry Division, National Institute of Standards and Technology, Gaithersburg, MD.
 Supervisor: Dr. Willie E. May, willie.may@morgan.edu (currently Vice President for Research, Morgan State University)

Leadership, Management, Accomplishments: for group of 10 staff members, postdoctoral researchers, guest researchers and graduate students performing research in microfluidics, biosensors, flow injection analysis, immunoassays, capillary electrophoresis, and supercritical fluid extraction. From 1993-1995:

- Managed the financial health of a group with a \$1 M budget
 - Provided project management and conducted group performance evaluations
 - Implemented a new team approach to promote collaboration, multidisciplinary science
 - Established system for annual project review for staff alignment and focus bringing the team to a new level of collaboration and concrete outputs, publications and standards
-

EDUCATION

Ph.D. TOXICOLOGY, May 1999

University of Maryland at Baltimore, *summa cum laude*

M. Sc. BIOENGINEERING, June 1986

With medical school and engineering curriculum

University of Utah, *cum laude*

B. Sc. CHEMISTRY, May 1983

With minors in mathematics and biochemistry

James Madison University, *magna cum laude*

TECHNOLOGY TRANSFER

At NIST

- 11 patents awarded with several previously licensed (complete list attached)
- Multiple CRADA partnerships with important industry for technology transfer and fundamental research
- MOUs established including: NASA, NFL, GE, Under Armour, Stanford University
- Technical representative for SBIR proposals granted for chemical sensors/microfluidics
- Internship at NIH clinical laboratories to validate and promulgate NIST-invented technology

At UMD

- Management and oversight of all technology transfer, innovation and entrepreneurship activities
- MOUs established including: Facebook, Lockheed Martin, MITRE, Northrup Grumman, IonQ
- Supported development of Mid-Atlantic Quantum Alliance- regional consortium of universities, companies, and federal agencies in quantum space
- Supported establishment of the Quantum Startup Foundry as a resource to build and support quantum startups in the District/Maryland/Virginia area

TECHNICAL STATURE, PUBLICATIONS: H index=38

Representative publications:

- Plant, A.L.; Locascio, L.E.; May, W.E.; Gallagher, P.D. Improved reproducibility by assuring confidence in measurements in biomedical research, *Nature Methods*, **2014**, *11*(9), 895-898.
 - Atencia, J.; Morrow, J.; Locascio, L.E. The Microfluidic Palette: A Diffusive Gradient Generator with Spatio-Temporal Control, *Lab Chip* **2009**, *9*(18), 2707-14.
 - Jones, B. J.; Hayes, M.; Locascio, L.E. "Radical Activated Cleavage: A Rapid Inorganic Alternative for Fragmentation of Peptides and Proteins" *Anal. Chem.* **2007**, *79*(4); 1327-1332.
 - Forry, S.P.; Reyes, D.R.; Gaitan, M.; Locascio, L.E. Dielectrophoretic Immobilization of Cells within Microfluidic Microenvironments" *Langmuir* **2006**, *22*(13), 5770-5775.
 - Brazhnik, K.P.; Vreeland, W.N.; Hutchison, J.B.; Kishore, R.; Wells, J.; Helmerson, K.; Locascio, L.E. "Directed Growth of Pure Phosphatidylcholine Nanotubes in Microfluidic Channels" *Langmuir* **2005**, *21*(23), 10814-17.
 - Jahn, A., Vreeland, W.N., Gaitan, M., Locascio, L.E. "Controlled Vesicle Self-Assembly in Microfluidic Channels with Hydrodynamic Focusing" *J. Am. Chem. Soc.* **2004**, *126*(9), 2674-2675.
 - Kulin S., Kishore R., Helmerson K., Locascio, L. "Optical manipulation and fusion of liposomes as microreactors" *Langmuir* **2003**, *19*(20), 8206-821.
 - Ross, D.; Locascio, L.E. "Microfluidic Temperature Gradient Focusing" *Anal. Chem.* **2002**, *74*(11), 2556-2564.
-

TECHNICAL STATURE, TALKS:

Representative talks:

- “From Basic Discovery to Intellectual Property”, American Association for the Advancement of Science. February 2016 (Invited).
- “Translating Discovery to the Bioeconomy”, American Institute for Medical and Biological Engineering, National Academy of Sciences, March 2015 (Invited Keynote).
- “Standards in the Life Sciences: NIST Supporting Science in the NCI”, Meeting of the NCI Board of Scientific Advisors, March 2015 (Invited).
- “The Materials Genome Initiative: Materials Discovery Through Manufacturing”, 143rd TMS Annual Meeting and Exhibition, San Diego, CA, February 2014 (Invited Keynote).
- “NIST’s Role in Supporting the Biotechnology Industry”, Biomufacturing Technology Summit, Institute for Bioscience and Biotechnology Research, Rockville, MD, June 2014 (Invited).
- “Standards in the Life Sciences: A NIST Perspective”, Global Biological Standards Institute, Washington DC, June 2014 (Invited).
- “Understanding the material in the context of the complex integrated system when considering materials safety”, World Materials Research Institutes Forum Symposium on Materials Meets Life, Switzerland, May 2013 (Invited Keynote).
- “The Materials Genome Initiative: Catalyzing a New Paradigm in Materials Research”, 8th Pacific Rim International Congress on Advanced Materials and Processing (PRICM-8) Waikoloa, Hawaii, August, 2013 (Invited Plenary).

RECENT HONORS

Fellow of the National Academy of Inventors

Fellow of the American Chemical Society

Fellow of the American Institute for Medical and Biological Engineering

ACS Earle B. Barnes Award for Leadership in Chemical Research Management

LEADERSHIP PHILOSOPHY Promote excellence and innovation* Create a collegial, collaborative, inclusive, respectful, and safe workplace for all * Value a strong work ethic * Empower others * Think creatively * Take smart risks * Be strategic

ADDENDUM

AWARDS

- Fellow of the National Academy of Inventors, 2020.
- NIST Gallery of Distinguished Scientists, 2018.
- Washington Academy of Sciences Award, Distinguished Career in Sciences-Engineering Sciences, 2017.
- ACS National Award: Earle B. Barnes Award for Leadership in Chemical Research Management sponsored by the Dow Chemical Company Foundation, 2017.
- NIST Safety Award for leadership, 2016.
- Analytical Scientist-The Power List Top 50 Influential Women, 2016.
- Fellow of the American Institute for Medical and Biological Engineering, 2016-present.
- ANSI Meritorious Service Award, 2014.
- Fellow of the American Chemical Society, 2011-present.
- Sigma Xi Distinguished Lectureship, 2009-2010.
- American Chemical Society Division of Analytical Chemistry Arthur F. Findeis Award, 2008.
- ASTM Distinguished Service Award, June 2006.
- U.S. Department of Commerce Silver Medal Award, November, 2006.
- NIST Technical Achievement Award, October, 2006.
- U.S. Department of Commerce Bronze Medal Award, November 1991.
- NIST Applied Research Award, 1993.
- National Tour Speaker for the Society of Applied Spectroscopy, 1993-1994.
- Certificate of Recognition, Department of Commerce, NBS, September, 1990.
- Certificate of Recognition, Department of Commerce, NIST, September, 1989.
- Certificate of Recognition, Department of Commerce, NIST, September, 1987.

LIST OF HIGH-LEVEL ACTIVITIES

- MEMBER AND CO-CHAIR, Council on Competitiveness, Technology Leadership and Strategy Initiative (TLSI), Working Group 1-Developing and Deploying at Scale Disruptive Technologies, 2019-present
- EXECUTIVE COMMITTEE MEMBER, Association of Public and Land Grant Universities, Council on Research, 2019-present
- MEMBER AND CHAIR, LGC Inc. External Advisory Board, 2019-2021
- MEMBER AND CHAIR, Lawrence Livermore National Laboratory Physical and Life Sciences Directorate External Review Committee, 2018-2021
- MEMBER, Life Sciences Advisory Board, Maryland Department of Commerce, 2017-2021 (official appointment 2020)
- CHAIR, Life Sciences Advisory Board Working Group 4 on Workforce development, 2018-2019
- MEMBER, National Academies Panel on Review of Extramural Basic Research at the Army Research Laboratories, 2019
- COMMITTEE MEMBER, National Science and Technology Council, Fast Track Action Committee on

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- Biosafety and Security, 2016
- MEMBER, ASTM International Board of Directors, 2016
 - CO-CHAIR, Subcommittee on the Materials Genome Initiative, National Science and Technology Council, 2012-2104, COMMITTEE MEMBER 2012-2017
 - COMMITTEE MEMBER, Subcommittee on Biological Defense Research and Development, National Science and Technology Council, 2012-2017
 - COMMITTEE MEMBER, Global Biological Standards Institute Scientific Advisory Council, 2014-2017
 - PRESIDENT, World Materials Research Institutes Forum, 2016-2017
 - COMMITTEE MEMBER, Institute for Bioscience and Biotechnology Research Steering Committee, 2014-2017
 - COMMITTEE MEMBER, Hollings Marine Laboratory Executive Board, 2012-2017.
 - CHAIR, CCQM adhoc Steering Committee on Microbial Measurements to Ensure Food Quality and Safety, 2011-2012
 - ADJUNCT FACULTY, University of Maryland Department of Chemistry and Biochemistry, 2010-2017
 - MEMBER, Organization for Economic Cooperation and Development, Working Party on Manufactured Nanomaterials, SG7, 2010-2012
 - COMMITTEE MEMBER, NSF Division of Chemistry, Committee of Visitors, 2009-2010
 - COMMITTEE MEMBER, Committee of Distinguished Advisors, University of Maryland, Department of Chemistry and Biochemistry, 2009-2013
 - MEMBER, Subcommittee on Standards, National Science and Technology Council, 2008- 2011
 - BOARD MEMBER, Chemical and Biological Microsystems Society, 2008-2012
 - CHAIR, MicroTAS 2008 Conference, San Diego, CA, 2008
 - CHAIR, American Chemical Society, Division of Analytical Chemistry, 2006-2008
 - MEMBER, Multidisciplinary Program Planning Group, American Chemical Society, 2008-2011
 - MEMBER, U.S. Pharmacopoeia Council of Experts Nominating Committee, 2009
 - CHAIR, ISO/TC229 Nanotechnologies U.S. TAG Working Group 3 on Environmental Health and Safety, 2007-2011
 - MEMBER, Ex-officio, National Science Advisory Board for Biosecurity, 2006
 - MEMBER, Biological Decontamination Standards Working Group, 2006
 - EDITORIAL BOARD MEMBER, Annual Reviews of Analytical Chemistry, 2006-2010
 - MEMBER, Bioanalytical Working Group, Consultative Committee for Amount of Substance (CCQM), 2008-present
 - CHAIR-ELECT, American Chemical Society, Division of Analytical Chemistry, 2005-2006
 - EDITORIAL ADVISORY BOARD MEMBER, *Analytical Chemistry* (journal), 2003-2005
 - MEMBER, Standards Working Group on Prescreening Technologies, Department of Homeland Security, 2005-2006
 - CHAIR, Sampling Standard Task Group on developing national standard for collecting suspicious powders, DHS, 2005-2006
 - ADVISORY BOARD MEMBER, Louisiana Science, Technology, Engineering and Mathematics (LA-STEM) Research Scholars Program, to increase diversity in the STEM disciplines, 2005-2006
 - CHAIR, Gordon Research Conference on the Physics and Chemistry of Microfluidics, Big Sky, MT, Oxford, England, August, 2005
 - VICE-CHAIR, Gordon Research Conference on the Physics and Chemistry of Microfluidics, Big Sky, MT, August, 2003

PUBLICATIONS

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116 scientific publications

(archival journals)

1. Locascio, L. E.; Janata, J. "Integrated Systems for Potentiometric Stripping Determinations" *Anal. Chim. Acta* **1987**, *194*, 99-107.
2. Locascio-Brown, L.; Plant, A. L.; Durst, R. A. "Use of Liposomes in Flow Injection Systems" *Anal. Chem.* **1988**, *60*, 792-797.
3. Plant, A. L.; Locascio-Brown, L.; Brizgys, M. V.; Durst, R. A. "Liposome-Enhanced Flow Injection Immunoanalysis" *Bio/Tech* **1988**, *6*, 266-269.
4. Locascio-Brown, L.; Plant, A. L.; Durst, R. A. "Liposome-Based Flow Injection Immunoassay System, Accuracy in Trace Analysis-Accomplishments, Goals, Challenges" *J. Res. NIST* **1988**, *93(6)*, 663-665.
5. Durst, R.A.; Locascio-Brown, L.; Plant, A.L.; Brizgys, M.V. "Liposome Enhanced Flow Injection Immunoanalysis" *Clin. Chem.* **1988**, *34*, 1700-1701.
6. Plant, A. L.; Brizgys, M. V.; Locascio-Brown, L.; Durst, R. A. "Generic Liposome Reagents for Immunoassays" *Anal. Biochem.* **1989**, *176*, 420-428.
7. Locascio-Brown, L.; Brizgys, M. V.; Plant, A. L.; Durst, R. A. "Radiometric and Fluorometric Determination of Aminosilanes and Protein Covalently Bound to Thermally Pretreated Glass Surfaces" *Anal. Chim. Acta* **1990**, *228*, 107-116.
8. Locascio-Brown, L.; Plant, A. L.; Durst, R. A. "Liposome Flow Injection Immunoanalysis: Implications for Sensitivity, Dynamic Range, and Antibody Regeneration" *Anal. Chem.* **1990**, *62(23)*, 2587-2593.
9. Plant, A.; Locascio-Brown, L.; Choquette, S.J.; Durst, R.A. "Interaction of Liposomes with Solid-Phase Antibodies" *J. Cell. Biochem. Suppl. 14 Pat B* **1990**, 366.
10. Plant, A. L.; Locascio-Brown, L.; Durst, R. A. "Immobilization of Binding Proteins on Monoporous Supports: Comparison of Protein Loading, Activity and Stability" *Appl. Biochem. Biotech.* **1991**, *30*, 83-98.
11. Yap, W. T.; Locascio-Brown, L.; Plant, A. L.; Choquette, S. J.; Horvath, W.; Durst, R. A. "Liposome Flow Injection Immunoassay: Theoretical Analyses of Competitive Immunoreactions Involving Univalent and Multivalent Ligands" *Anal. Chem.* **1991**, *63(18)*, 2007-2011.
12. Choquette, S. J.; Locascio-Brown, L.; Durst, R. A. "Planar Waveguide Immunosensor with Fluorescent Liposome Amplification" *Anal. Chem.* **1992**, *64(1)*, 55-60.
13. Locascio-Brown, L.; Chesler, R.; Kroll, M.; Plant, A. L.; Durst, R. A. "Determination of Theophylline in Serum by Liposome-Based Flow Injection Immunoassay" *Clin. Chem.* **1993**, *39*, 386-391.
14. Locascio-Brown, L.; Choquette, S. J.; "Immunosensing in FIA Using Liposome Amplification for the Measurement of Estrogens" *Talanta* **1993**, *40 (12)*, 1899-1904.
15. Choquette, S.J; Locascio-Brown, L. "Thermal Detection of Enzyme Labelled Antigen-Antibody Complexes Using Fiber Optic Interferometry" *Sensors and Actuators B* **1994**, *22*, 89-96.

16. Locascio-Brown, L.; Martynova, L.; Christensen, R.G.; Horvai, G. "Flow Injection Immunoassay using Solid Phase Entrapment" *Anal. Chem.* **1996**, *68*(9), 1665-1670.
17. Roberts, M.R.; MacCrehan, W.A.; Locascio-Brown, L. "Behavior of Liposomes in Capillary Electrophoresis" *Anal. Chem.* **1996**, *68*(19), 3434-3440.
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24. Barker, S.L.R.; Ross, D.; Tarlov, M.; Locascio, L.E. "Control of Flow Direction in Microfluid Devices with Polyelectrolyte Multilayers" *Anal. Chem.* **2000**, *72*(24), 5925-5929.
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26. Ross, D.; Johnson, T.J.; Locascio, L.E. "Imaging of Electro-Osmotic Flow in Plastic Microchannels" *Anal. Chem.* **2001**, *73*(11), 2509-2515.
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28. Jiang, Y.; Wang, P-C; Locascio, L.E.; Lee, C.S. "Integrated Plastic Microfluidic Devices with ESI-MS for High Throughput Drug Screening and Residue Analysis" *Anal. Chem.* **2001**, *73*(9), 2048-2053.
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96. Ross, D.J.; Locascio, L.E. "Microfluidic Temperature Gradient Focusing" In *Micro Total Analysis Systems '02 Volume ;* Baba, Y., Shoji, S., van den Berg, A., Eds.; Kluwer Academic Publishers: Dordrecht, The Netherlands, 2002; pp 661-663.
97. Locascio, L.E. "Fabrication of Polymer Microchannels by Laser Ablation and Hot Embossing" In *Microchip Capillary Electrophoresis: Methods and Protocols. Methods in Molecular Biology, vol. 339*; Henry, C. S., Ed.; Humana Press: Totowa, NJ, 2006.
98. Vreeland, W.N.; Locascio, L.E., "Nature's Packaging: Using Bio-Inspired Liposomes for Rapid, High Efficiency Mixing in Microfluidic Systems" In *Micro Total Analysis Systems 2003*; Northrup, M.A., Jensen, K.F., Harrison, D.J., Eds.; Transducers Research Foundation, Inc.: San Diego, 2003; pp. 37-40.
99. Brazhnik, K.P.; Vreeland, W.N.; Howell, P.B.; Kishore, R.; Wells, J.; Helmerson, K.; Locascio, L.E., "Manipulating Self-Assembled Nanotubes" In *Micro Total Analysis Systems 2003*; Northrup, M.A., Jensen, K.F., Harrison, D.J., Eds.; Transducers Research Foundation, Inc.: San Diego, 2003; pp. 689-692.
100. Reyes, D.R.; Perruccio, E.; Becerra, S.P.; Locascio, L.E.; Gaitan, M. "Patterning Retinal Cells on Polyelectrolyte Multilayers", In *Micro Total Analysis Systems 2003*; Northrup, M.A., Jensen, K.F., Harrison, D.J., Eds.; Transducers Research Foundation, Inc.: San Diego, 2003; pp. 713-716.
101. Locascio L.E.; Vreeland, W.N.; Jahn, A.; Gaitan, M. "Liposomes as Model Cellular Systems: Liposome Formation and Applications in Microfluidics" In *Lab on a Chip for Cellomics*; Andersson, H., van den Berg, A., Eds.; Kluwer Academic Publishers: Dordrecht, The Netherlands, 2004; pp. 59-81.
102. Locascio, L.E.; Brazhnik, K.P.; Vreeland, W.N.; Kishore, R.; Helmerson, K. "Microfluidic-Assisted Lipid Nanotube Formation and Manipulation with Light" In *Micro Total Analysis Systems 2004*; Laurell, T., Nilsson, J., Jensen, K.F., Harrison, D.J., Kutter, J.P., Eds.; Royal Society of Chemistry: Cambridge, 2004; pp. 399-401.
103. Jahn, A.; Vreeland, W.N.; Gaitan, M.; Locascio, L.E. "Multichannel Continuous Flow Microfluidic System for Single Molecule Vials" In *Micro Total Analysis Systems 2004*; Laurell, T., Nilsson, J., Jensen, K.F., Harrison, D.J., Kutter, J.P., Eds.; Royal Society of Chemistry: Cambridge, 2004; pp. 345-327.
104. Thomas, G.; El-Giar, E. M.; Locascio, L. E.; Tarlov, M. J. "Hydrogel-Immobilized Antibodies for Microfluidic Assays", In *Microfluidic Techniques: Reviews and Protocols, Vol 321* Minter, S. D., Ed.; Humana Press Inc.: Totowa, NJ, 2005; pp 83-95.
105. Reyes, D.R.; Locascio, L.E.; Gaitan, M. "Polyelectrolyte Multilayers" In *Encyclopedia of Biomaterials and Biomedical Engineering*; Taylor & Francis, Abingdon, UK , 2005; 1-15.
106. Forry, S.P., Reyes, D.R., Polk, B.J.; Gaitan, M., Locascio, L.E., "Generating Cell Arrays in Microfluidic Networks", In *Proceedings of the μ TAS Conference Volume 2*; Jensen, K.F., Han, J., Harrison, D.J., Voldman, J., Eds.; Transducers Research Foundation, Inc.: San Diego, 2005; pp. 1398-1400.
107. Hutchison, J.B.; Brazhnik, K.P.; Locascio, L.E. "Construction of Integrated Micro- and Nanofluidic

- Systems: Application of Photopolymerizations and Block Copolymer Self-Assembly” In *Proceedings of the μ TAS Conference Volume 1*; Jensen, K.F., Han, J., Harrison, D.J., Voldman, J. Eds.; Transducers Research Foundation, Inc.: San Diego, 2005; pp. 690-692.
108. Jones, B.J.; Locascio, L.; Hayes, M. “Radical Activated Cleavage of Peptides and Proteins: An Alternative to Proteolytic Digestion” In *Proceedings of the μ TAS Conference Volume 1*; Jensen, K.F., Han, J., Harrison, D.J., Voldman, J. Eds.; Transducers Research Foundation, Inc.: San Diego, 2005; pp. 286-288.
109. Auroux, P-A.; Shah, J. J.; Booth, J.; Rao, M. V.; Locascio, L.E.; Gaitan, M. “Microfluidic Method for Thermal Cycling by Microwave Dielectric Heating” In *MicroTotal Analysis Systems 2006 Volume 2*; Kitamori, T, Fujita, H., Hasebe, S. Eds.; Society for Chemistry and Micro-Nano Systems (CHEMINAS), Tokyo, 2006; pp. 1465-1467.
110. Munson, M.S.; Shackman, J.G.; Locascio, L.E.; Ross, D. “Temperature Gradient Focusing for On-Chip Monitoring of Enzyme Reaction Products in Complex Sample Mixtures” In *MicroTotal Analysis Systems 2006 Volume 1*; Kitamori, T, Fujita, H., Hasebe, S. Eds.; Society for Chemistry and Micro-Nano Systems (CHEMINAS), Tokyo, 2006; pp. 849-851.
111. Reyes, D.R.; Hutchison, J.B.; Locascio, L.E.; Gaitan, M. “Photopatterned Polyelectrolyte Multilayers for Cell Culture” In *MicroTotal Analysis Systems 2006 Volume 1*; Kitamori, T, Fujita, H., Hasebe, S. Eds.; Society for Chemistry and Micro-Nano Systems (CHEMINAS), Tokyo, 2006; pp. 260-262.
112. Vreeland, W.N.; Hong, J.S.; Jahn, A.; Raghavan, S.R.; Locascio, L.E.; Gaitan, M. “Microfluidic Directed Molecular Self Assembly and Templating of Bioinspired Nanoparticles” In *MicroTotal Analysis Systems 2006 Volume 1*; Kitamori, T, Fujita, H., Hasebe, S. Eds.; Society for Chemistry and Micro-Nano Systems (CHEMINAS), Tokyo, 2006; pp. 251-253.
113. Jahn, A.; Vreeland, W.N.; DeVoe, D.; Locascio, L.E.; Gaitan, M. “Precise Characterization of Liposome Populations formed in a 5-Channel Flow Focused System” In *MicroTotal Analysis Systems 2006 Volume 1*; Kitamori, T, Fujita, H., Hasebe, S. Eds.; Society for Chemistry and Micro-Nano Systems (CHEMINAS), Tokyo, 2006; pp. 119-121.
114. Forry, S.P.; Kralj, J.G.; Locascio, L.E. “Gas Partial Pressures Controlled Between Microchannels” In *The Proceedings of μ TAS 2007 Volume 2*; Viovy, J-L, Tabeling, P., Descroix, S., Malaquin, L., Eds.; Chemical and Biological Microsystems Society, San Diego, USA, 2007; pp. 964-966.
115. Meacham, J.M.; Zarnitsyn, V.; Varady, M.; Atencia, J.; Locascio, L.E.; Degertekin, F.L.; Federov, A.G. “Fabrication of a Disposable Electrosonic Microarray in Thiolene and Performance Characterization for Biomolecule Delivery” In *The Proceedings of μ TAS 2007 Volume 2*; Viovy, J-L, Tabeling, P., Descroix, S., Malaquin, L., Eds.; Chemical and Biological Microsystems Society, San Diego, USA, 2007; pp. 964-966.
116. Kralj, J.G.; Player, A.; Peterson, D.; Forry, S.P.; Munson, M.S.; Kawasaki, E.; Locascio, L.E. “Non-PCR Linear Amplification of mRNA Toward Single Cell Whole Transcriptome Analyses” In *The Proceedings of μ TAS 2007 Volume 2*; Viovy, J-L, Tabeling, P., Descroix, S., Malaquin, L., Eds.; Chemical and Biological Microsystems Society, San Diego, USA, 2007; pp. 964-966.

(opinion piece)

Why Science Depends on Diversity, *The Analytical Scientist* January 25, 2017
{<https://theanalyticalscientist.com/business-education/why-science-depends-on-diversity?logintype=logout&cHash=f57015f5c25cbc8fbec00f8437da75d6>}.

PATENTS

1. Controlled vesicle self-assembly in continuous two phase flow microfluidic channels
Patent number: 9198645
2. Microfluidic apparatus to control liposome formation
Patent number: 8715591
3. Magnetic connectors for microfluidic applications
Patent number: 8337783
4. Fabrication method of topographically modulated microstructures using pattern homogenization with UV light
Patent number: 8236480
5. Method and device for generating diffusive gradients in a microfluidic chamber
Patent number: 8216526
6. Fluidic temperature gradient focusing
Patent number: 7029561
7. Surface charge modification within preformed polymer microchannels with multiple applications including modulating electroosmotic flow and creating microarrays
Patent number: 6982028
8. Method for microfluidic flow manipulation
Patent number: 6907895
9. Polyelectrolyte derivatization of microfluidic devices
Patent number: 6860980
10. Chemical modification of substrates by photo-ablation under different local atmospheres and chemical environments for the fabrication of microstructures
Patent number: 6703189
11. Liposome immunoanalysis by flow injection assay
Patent number: 5389523

PRESENTATIONS

101 scientific lectures – national and international

1. "Liposome-Based Flow Injection Immunoassay System", Symposium on Accuracy in Trace Analysis, Gaithersburg, MD, October, 1987.
2. "The Use of Liposomes in Continuous Immunoanalysis", American Association for the Advancement of Medical Instrumentation, Washington, DC, May, 1988.
3. "Analytical Applications of Immobilized Antibody in Liposome-Enhanced Flow Injection Immunoassays", Rocky Mountain Conference on Analytical Chemistry, Denver, CO, July, 1989.
4. "Flow Injection Immunoassay Using Liposomes in Automated Analysis" Oak Ridge Conference, Tampa, FL, April 1990.
5. "Clinical Analysis of Theophylline in Serum Using FIHA," Technical University of Munich, Munich,

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- Germany, June, 1991, (Invited).
 6. "Clinical Analysis of Theophylline in Serum Using FIIA," Technical University of Budapest, Hungary, Budapest, Hungary, June, 1991, (Invited).
 7. "Theophylline Determined by Flow Injection Immunoassay," American Association of Clinical Chemistry, Washington, DC, July 1991.
 8. "Flow Injection Immunoassay Using Liposomes in Automated Analysis" Pacific Northwest Laboratories, Richland, WA, February, 1992, (Invited).
 9. "Using Components of the Immune System to Improve the Performance of Analytical Chemistry Methods" James Madison University, Harrisonburg, VA, April, 1992, (Invited).
 10. "Assessing Breast Cancer Risk: Measuring Trace Levels of Hormones by Flow Injection Immunoassay," NIST/NCI QA Micronutrient Analysis Workshop, Gaithersburg, MD, November, 1992.
 11. "Immunosensing in FIA Using Liposome Amplification: Measurement of Estrogens for Early Assessment of Breast Cancer," Winter Conference on Flow Injection Analysis, Marathon, FL, January, 1993, (Invited).
 12. "Integrated Flow Immunoanalysis Systems and Sensor Research at NIST," Presentation to the Department of Defense, Aberdeen Proving Ground, MD, January, 1993.
 13. "Measurement of Estrogens by Flow Injection Immunoassay," Paracelsian, Inc., Ithaca, NY, March, 1993, (Invited).
 14. "Simultaneous Measurement of Multiple Hormone Metabolites using Flow Injection Immunoassay for Assessment of Breast Cancer", Federation of Analytical Chemistry and Spectroscopy Societies, 20th Annual Meeting, Detroit, MI, October 1993.
 15. "Novel Immunoassays for Measurement of Hormone Metabolites to Assess Cancer Risk", 1994 Society of Applied Spectroscopy Speaker Tour, Butler University, Indianapolis, Indiana, April 1994, (Invited).
 16. "Novel Immunoassays for Measurement of Hormone Metabolites to Assess Cancer Risk", 1994 Society of Applied Spectroscopy Speaker Tour, University of British Columbia, Vancouver, BC, April 1994, (Invited).
 17. "Novel Immunoassays for Measurement of Hormone Metabolites to Assess Cancer Risk", 1994 Society of Applied Spectroscopy Speaker Tour, Second Biennial Summer Meeting of the Snake River Section of the SAS, Gregson, MO, June 1994, (Invited).
 18. "Novel Immunoassay Based Technology for Assessing Breast Cancer Risk", National Organization of Black Chemists and Chemical Engineers, Atlantic City, NJ, April 1994, (Invited).
 19. "Continuous Flow Assays for Clinical Analytes", Mayo Clinic, Rochester, MN, January 1995, (Invited).
 20. "The Use of Liposomes As Analytical Reagents in Continuous Flow Systems", University of Massachusetts, Amherst, MA, February 15, 1996, (Invited).
 21. "Continuous Flow Assays for Clinical Analytes", University of Maryland at Baltimore, Baltimore, MD, March 29, 1996.
 22. "Plastic Microfluid Devices Prepared by Imprinting Techniques", 19th International Symposium on Capillary Chromatography and Electrophoresis, Wintergreen, VA, May 18, 1997.
 23. "Fabrication and Use of Plastic Microfluid Devices: The New Fluid Circuit Technology", Analytical Chemistry Division Seminar, NIST, Gaithersburg, MD, July 31, 1997.
 24. "Plastic Microfluid Systems Fabricated by Imprinting Methods", Frederick Conference on Capillary Electrophoresis, October 21, 1997.
 25. "Fabricating Plastic Microfluid Systems for Clinical Measurements", Dow Chemical Company, Midland, MI, April 30, 1998, (Invited).
 26. "Fabricating Plastic Microfluid Systems for Clinical Measurements", Oak Ridge Conference on Clinical

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- Chemistry, Raleigh, NC, April 23, 1998.
27. "Plastic Microfluid Devices for Clinical Applications", University of Maryland College Park, College Park, MD, September 25, 1998.
 28. "Plastic Microfluid Devices for Clinical Applications", FACSS, Austin, TX, October 12, 1998, (Invited).
 29. "Plastic Microfluid Devices for Clinical Applications", Micro-TAS, Banff, Alberta, Canada, October 15, 1998.
 30. "Plastic Microfluid Devices for Clinical Applications", Pennsylvania State University, University Park, PA, October 28, 1998, (Invited).
 31. "Integration of MicroReactive Elements in Plastic MicroFluid Systems", University of Maryland, College Park, Maryland, December 3, 1999, (Invited).
 32. "Fabrication of Plastic Microfluid Systems", Washington Chromatography Discussion Group, Gaithersburg, MD, May 20, 1999, (Invited).
 33. "Integration of MicroReactive Elements in Plastic MicroFluid Systems", University of South Florida, April 7, 2000, (Invited).
 34. "Integrated Silicon Microheating Elements using Silicon-on-Plastic Drop-In Functionality", MicroTAS 2000, May 16, 2000.
 35. "Fabrication and Characterization of Plastic Lab-on-a-Chip Devices", CSTL Colloquium, NIST, Boulder, August 18, 2000, (Invited).
 36. "Control and Modulation of Biochemical Reactions in Plastic Microfluid Devices", FACSS 2000, Nashville, TN, September 25, 2000 (Invited).
 37. "Applications of Analytical Nanotechnology", DIR-AG Meeting, Downer's Grove, IL, October 5, 2000 (Invited).
 38. "Fabrication and Characterization of Plastic Microfluid Devices", Electrochemical Society Meeting, Phoenix, AZ, October 24, 2000.
 39. "BioMicrofluidic Devices: New Technologies for Probing Biological Systems", Center for Advanced Research in Biotechnology, North Potomac, MD, February 12, 2001. (Invited).
 40. "Characterization of Plastic Microfluid Systems and Their Application in Biotechnology", University of Maryland Department of Chemistry and Biochemistry, March 11, 2001 (Invited).
 41. "Applications of Surface Modification Through Direct Write Patterning", Gordon Conference on Microfluidics, Oxford, England, August 2, 2001 (Invited).
 42. "Patterning Plastic Microchannels to Modulate Flow", MEMS Alliance Special Topics Workshop on Microfluidics and RF MEMS, Johns Hopkins Applied Physics Lab, MD, November 16, 2001 (Invited)
 43. "Patterning Plastic Microchannels to Modulate Flow" Conference of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, New Orleans, LA, March 25, 2002. (Invited)
 44. "A Cell-based Microfluidic Sensor to Predict Biofilm Deflocculation Events in Wastewater Treatment Plants" Fifth Workshop on Biosensors and Biological Techniques in Environmental Analysis Cornell University, Ithaca, NY, June 4, 2002. (Invited)
 45. "Flow Control in Plastic Microfluidic Systems: Modulating Surfaces by Direct Write MicroPatterning", University of North Carolina Department of Chemistry Seminar Series, Chapel Hill, NC, April 29, 2002 (Invited).
 46. "Flow Control in Plastic Microfluidic Systems: Modulating Surfaces by Direct Write MicroPatterning", GlaxoSmithKline Seminar Series, Research Triangle Park, NC, April 30, 2002, (Invited).
 47. "Microfluidic Passive Mixing Structures" 201st Electrochemical Society Meeting, Philadelphia, PA, May 14, 2002. (Invited).
 48. "Manipulating Nanoscale Reactions in Polymer Microfluidic Systems", Virginia Polytechnic and State

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- University, October 4, 2002 (Invited).
49. “Manipulating Nanoscale Reactions in Polymer Microfluidic Systems”, Florida State University, October 11, 2002 (Invited).
 50. “Microfluidic Temperature Gradient Focusing,” 26th International Symposium on Capillary Chromatography & Electrophoresis,” Las Vegas, NV, May 22, 2003 (Invited).
 51. “Applications of Liposomes in Microfluidic Systems”, ACS National Meeting, New York, NY, September 9, 2003 (Invited).
 52. “Nature’s Packaging: Using Bio-Inspired Liposomes for Rapid High-Efficiency Mixing in Microfluidic Systems”, FACSS Conference, Fort Lauderdale, FL, October 23, 2003, (Invited).
 53. “Nature’s Packaging: Using Bio-Inspired Liposomes for Rapid High-Efficiency Mixing in Microfluidic Systems”, University of Michigan, Chemistry Department Seminar, October 30, 2003, (Invited).
 54. “Using Liposomes for High-Efficiency Mixing in Microfluidic Systems”, LabAutomation 2004, February 5, 2004, (Invited).
 55. “New methods for chemical separation and nanoparticle formation using microfluidic systems”, University of Maryland at Baltimore, Mechanical Engineering Department Seminar, October 14, 2004, (Invited).
 56. “Performing Reactions and Separations in Nanoliter Samples: A NIST Microfluidics Approach”, Applied Biosystems, CA, October 19, 2004, Foster City, CA (Invited).
 57. “Microfluidic-Assisted Lipid Nanotube Formation and Manipulation with Light,” Malmö, Sweden, September 25, 2004.
 58. “Controlled Liposome Self Assembly in Microfluidic Systems”, Pittsburgh Conference, Orange County Convention Center, Orlando, FL, February 28, 2005 (Invited).
 59. “Microfluidic Platform for Forensic Applications,” Pittsburgh Conference, Orange County Convention Center, Orlando, FL, March 12-17, 2006 (Invited).
 60. “Development of a National Standard for Sampling Suspicious Powders,” Defense Security Innovation, Quebec, Canada, November 15-18, 2005 (Invited).
 61. “Cells and Model Cell Systems in Microfluidics,” 6th International Symposium on Microchemistry and Microsystems (ISMM2006), Hakone, Japan, June 7-8, 2006 (Invited).
 62. “Development of a U.S. National Standard for Sampling Suspicious Powders,” Second National Conference on Environmental Sampling and Detection for Bio-Threat Agents, Brooklyn, NY, October 25-27, 2006, (Invited).
 63. “Understanding Cellular Behavior Using Microfluidics”, Hollings Marine Laboratory, February 2, 2007 (Invited).
 64. “Understanding Cellular Behavior Using Microfluidics”, South Carolina Bioengineering Alliance, Medical University of South Carolina, Charleston, SC, February 3, 2007 (Invited).
 65. “Research and Metrology in the NIST Biochemical Science Division”, National Institute of Metrology (NIM), Beijing, China, June 11, 2007 (Invited).
 66. “Revision of ASTM E2458: Standards for Sample Collection of Suspected Biological Agents”, The 3rd National Conference on Environmental Sampling and Detection for Bio-Threat Agents, Las Vegas, NV, December 1-3, 2008 (Invited).
 67. “Award Lecture: Microfluidics as a tool to enable research and discovery in the life sciences”, The 236th ACS National Meeting, Philadelphia, PA, August 17-21, 2008 (Invited).
 68. “Microfluidics as a tool to enable research and discovery in the life sciences”, 2008-2009 Bergveld Lecture, University of Twente, Enschede, The Netherlands, January 16, 2009 (Invited).
 69. “Cellular Biometrology,” CCQM Plenary, BIPM, Paris, France, April 2009 (Invited).
71. Locascio,

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- L.E. “NIST Biochemical Science Division,” University of Maryland at Baltimore, Baltimore, MD, July 2010.
70. “Microfluidics as a tool to enable research and discovery in the life sciences”, Johns Hopkins University, Baltimore, MD, September 2010 (Invited).
71. “NIST Biochemical Science Division: Programs, Interactions, and Outlook,” Bioreliance, Inc., Rockville, MD, April 28, 2010 (Invited).
72. “U.S. Strategy for Nanotechnology Standards in the Environmental, Health and Safety Area”, Maastricht, The Netherlands, May, 18, 2010.
73. “Environmental, Health and Safety Standards, International Standards Report,” Maastricht, The Netherlands, May 17, 2010.
74. “NIST Biomarker Reference Laboratory, EDRN Steering Committee Meeting, Rockville, MD, August, 2010.
75. “How Standards are Developed and Used and the Role of NIST”, Biospecimen Quality Assessment & Standards Development Workshop, Rockville, MD, October 21, 2010 (Invited).
76. “U.S. Strategy for Nanotechnology Standards in the Environmental, Health and Safety Area”, Kuala Lumpur, December 6, 2010.
77. “NIST Biochemical Science Division: Programs, Interactions, and Outlook,” NRC Canada, Montreal, Canada, November 30, 2011 (Invited).
78. “Summarizing the Nanostandards World,” FDA, Rockville, MD, February 10, 2011 (Invited).
79. “Microfluidics as a Tool to Enable Research and Discovery in the Life Sciences,” Indiana University of Pennsylvania, Indiana, PA, April 19, 2011 (Invited).
80. “Joint NIST-University of Maryland Program in Biomolecular Structure, Function, and Metrology,” University of Maryland Clark School Board of Visitors, IBBR, Rockville, MD, May 2, 2011 (Invited).
81. “Summarizing the Nanostandards World,” IEEE Nano 2011, August 16, 2011 (Invited).
82. “U.S. Strategy for Nanotechnology Standards in the Environmental, Health and Safety Area”, St. Petersburg, Russia, May 16, 2011.
83. “NIST, the Material Measurement Laboratory, and the Biosciences”, INMETRO, Rio de Janeiro, Brazil, May 29, 2012 (Invited).
84. “Goal Setting for the Young Scientist”, Boulder, CO, June 16, 2012 (Invited).
85. “Understanding the simple material in the context of the complex integrated system when considering materials safety”, World Materials Research Institutes Forum Symposium on Materials Meets Life, May, 2013 (Invited).
86. “The Materials Genome Initiative: Catalyzing a New Paradigm in Materials Research”, 8th Pacific Rim International Congress on Advanced Materials and Processing (PRICM-8) Waikoloa, Hawaii, August 4-9, 2013 (Invited Plenary).
87. “The Scientific Legacy of Dolphus E. Milligan”, The Milligan Symposium, Gaithersburg, MD, March 2014.
88. “The Materials Genome Initiative: Materials Discovery Through Manufacturing”, 143rd TMS Annual Meeting and Exhibition, San Diego, CA, February 18, 2014 (Invited Keynote).
89. “NIST’s Role in Supporting the Biotechnology Industry”, Biomanufacturing Technology Summit, Institute for Bioscience and Biotechnology Research, Rockville, MD, June 13, 2014 (Invited).
90. “Innovating within NIST to Support the Marketplace”, NIST, Gaithersburg, MD, March 6, 2014 (Invited).
91. “Standards in the Life Sciences: A NIST Perspective”, Global Biological Standards Institute, Washington DC, June 25, 2014 (Invited).
92. “Ensuring Confidence in Precision Medicine”, APMP 2015 , Beijing, China, November 4, 2015

- (Invited).
93. “From Basic Discovery to Intellectual Property and Beyond: from a federal laboratory’s perspective”, AAAS, Washington DC, February 12, 2016 (Invited).
 94. “Biomufacturing in the NIST Material Measurement Laboratory”, Genentech, San Francisco, CA, March 11, 2016 (Invited).
 95. “Measurements and Standards for Precision Medicine”, Protein and Peptide Therapeutics and Diagnostics: Research and Quality Assurance International Workshop, Chengdu, China, June 1, 2016 (Invited).
 96. “How to Promote Staff Engagement”, Visiting Committee on Advanced Technology, NIST, Gaithersburg, MD, February 3, 2016.
 97. “Chemical Sciences at NIST”, National Academies Board on Chemical Sciences and Technology, Washington DC, March 3, 2016 (Invited).
 98. “Activities of the CCQM”, Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany, April 26, 2016 (Invited).
 99. “James Madison University Chemistry Roundtable: Perspectives on a Career in the Chemical/Biosciences”, Harrisonburg, VA, October 28, 2016 (Invited).
 100. “Why Standards for Microbiome Measurements?”, NIH/NIST Joint Workshop on Standards for Microbiome Measurements, Gaithersburg, MD, August 8, 2016 (Invited).
 101. “Innovation in the US and Academic Ecosystem: Is the US Ready for What Comes Next?”, 1st Meeting of the Swedish Chemical Society, Lund, Sweden, June 17, 2017, (Invited).
 102. +Numerous presentations on UMD research

GRADUATE STUDENTS AND POSTDOCS

MENTORSHIP

32 graduate students/postdoctoral fellows including 17 female and/or other underrepresented minority in STEM

Graduate Students (co-mentored in collaboration with major professor at listed institution)

1. Perso, C.E, University of Michigan*
2. Xu, J., University of Maryland
3. Barker, S.L.R., Virginia Tech*
4. Esch, M.B., Cornell University*
5. Jiang, Y., University of Maryland
6. Gao, J., University of Maryland
7. Hong, J., Duke University, University of Maryland*
8. Evju, J. K., George Washington University
9. Howell, P. B., Jr.
10. Brazhnik, K.P., University of Maryland*
11. Kamande, M.W, Louisiana State University*
12. Crivat, G, Louisiana State University*
13. DePaoli, S., Louisiana State University*
14. Lacerda, S, Louisiana State University*
15. Holbrook, D., Virginia Tech
16. Maragh, S., Johns Hopkins University*

Post Docs

17. Branham, M.L., University of Florida*
18. Johnson, T.J., University of Washington

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19. Waddell, E.A, Louisiana State University*
 20. Ross, D., California Institute of Technology
 21. Henry, A.C., Louisiana State University*
 22. Vreeland W.N., Northwestern University
 23. Reyes, D.R., University of Puerto Rico*
 24. Forry, S.P, University of North Carolina
 25. Ball, J.C., University of Tennessee
 26. Jones, B., Arizona State University*
 27. Atencia, J, University of Navarra*
 28. Munson, M., University of Washington
 29. Kralj, J.G, MIT
 30. Stavis, S, Cornell University
 31. Zook, J.M, Penn State/University of Memphis
 32. Strychalski, E., Cornell University*

*Female and/or other underrepresented minority in STEM