FRONTIERS OF MATERIALS RESEARCH: A DECADAL SURVEY AGENDA

Wednesday, November 29, 2017

Room: Columbus 1&2 at the Boston Marriott Copley, located at 110 Huntington Avenue, Boston, MA

Open SESSION

8:00 a.m. – 8:30 a.m.	**Working Breakfast (in the meeting room)**
8:30 a.m. – 8:45 a.m.	**Welcome** Study Co-chairs
8:45 a.m. – 9:25 a.m.	The Community of Interest and the Air Force S&T Challenges in Materials **Timothy Bunning,** *Chief Scientist of the Materials and Manufacturing Directorate, Wright-Patterson Air Force Base*
9:25 a.m. – 10:05 a.m.	Supporting the Mission - Army S&T Challenges in Materials **Mark VanLandingham,** *Division Chief, Materials and Manufacturing Science Division, US Army Research Laboratory*
10:05 a.m. – 10:20 a.m.	Break

Closed SESSION

10:20 a.m. – 10:40 a.m.	**What we just heard from the speakers** Discussion, all
10:40 a.m. – 11:40 a.m.	**Sub-group leaders outline the current report section/chapter status** Tia, Ian and Jos (& Kevin and Steve)
11:40 a.m. – 12:40 p.m.	Lunch
12:40 p.m. – 2:00 p.m.	**Missing report parts, how to complete identified parts needed** Discussion, all
2:00 p.m. – 2:45 p.m.	**Potential findings and recommendations** Discussion, all
2:45 p.m. – 3:00 p.m.	Break
3:00 p.m. – 5:00 p.m.	**Breakout writing sessions (and MRS Town Hall)** All
5:00 p.m. – 5:30 p.m.	**Breakout sessions report back** Tia, Ian and Jos
6:00 p.m. – 8:00 p.m.	**Committee dinner** All

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8:30 a.m. – 8:45 a.m.	**Welcome** Study Co-chairs
8:45 a.m. – 9:25 a.m.	Supporting the Mission - Navy S&T Challenges in Materials **Julie Christodoulou,** *Director, Naval Materials S&T, ONR*

Closed SESSION

9:25 a.m. – 9:45 a.m.	**What we just heard and how it relates to our SOT** Discussion, all
9:45 a.m. – 10:00 a.m.	Break
10:00 a.m. – 11:40 a.m.	**Sub group discussions on the path forward and schedules for internal phone meetings in December and January** Discussion, three separate groups
11:40 a.m. – 12:40 p.m.	Lunch
12:40 p.m. – 2:00 p.m.	**Individual work assignments as aligned to the full report** Discussion, all
2:00 p.m. – 2:45 p.m.	**Timeline and general to do's until the last meeting** Discussion, all
2:45 p.m. – 3:00 p.m.	Break
3:00 p.m.	Adjourn meeting

Speaker Bios on next page

Speaker Bios

Dr. Timothy J. Bunning

Timothy J. Bunning, a member of the Senior Executive Service, is the Chief Scientist of the Materials and Manufacturing Directorate, Air Force Research Laboratory, Air Force Materiel Command, Wright-Patterson Air Force Base, Ohio. In this position, he shares responsibility to define, advocate and implement a strategic vision for the research and development activities within the Materials and Manufacturing Directorate. He works across AFRL, other Defense Department entities and with our academic and industrial partners to coordinate, leverage and integrate materials and processing-centric efforts at all levels of technical and manufacturing readiness.

Dr. Bunning joined the Materials and Manufacturing Directorate in 1990 as a Ph.D. student. His research was funded through an Air Force Office of Scientific Research doctoral fellowship and conducted on-site within the directorate. After earning his doctorate and conducting post-doctoral studies at Cornell University, he spent six years as an on-site contractor before transitioning to civil service in 1998. Dr. Bunning has served many roles within the Materials and Manufacturing Directorate including in-house researcher, project engineer, research team leader, branch chief, division technical director, division chief and mentor. He entered the scientific and professional cadre of senior executives in 2015.

Dr. Bunning is active in numerous technical communities and is a Fellow of AFRL, Optical Society of America, Society of Optical Engineering, American Physical Society, American Chemical Society, Royal Society of Chemistry and Polymeric Materials Science and Engineering. His research interests center on responsive optical, electro-optical and photo-optical structured organic and hybrid materials and approaches for utility in optical sensing, laser beam control and filtering (modulation) applications. He has co-authored more than 260 refereed papers and over 120 proceedings, has edited several books and holds 18 patents. Additionally, he has presented hundreds of invited presentations, colloquia and seminars, and his team's research efforts have been highlighted in many professional settings. He is active in numerous technical societies, is currently an adjunct professor in the Department of Materials Science and Engineering, Georgia Tech, and is on the editorial boards of several journals.

Dr. Julie Christodoulou

Julie Christodoulou is the Director, Naval Materials S&T Division, Sea Warfare and Weapons Department at US Office of Naval Research and a member of the Senior Executive Service. She is responsible for research programs in materials and processing capabilities for the superiority, reliability, affordability and environmental quality of naval platforms and systems with an annual budget of ~$80M.

Dr. Christodoulou entered the Senior Executive Service in June 2007 and has 15 years of Federal Service. Dr. Christodoulou also is the S&T Executive for the Future Naval Platform pillar Enterprise and Platform Enablers, a transition-driven ~$60M/year portfolio to provide cross-cutting technologies to lower acquisition, operations, and maintenance costs while addressing warfighter capability gaps. She is a member of the triumvirate leadership team for the national Materials Genome Initiative for Global Competitiveness announced by President Obama in June 2011. Among other national and international coordination responsibilities, she is the Navy Principal to the Department of Defense Materials and Processes Community of Interest for Materials, which she chaired from 2007 through 2010. Dr. Christodoulou joined ONR in 2002 as the Program Officer for Structural Metals and conceived, established funding, initiated and led a number of successful basic and applied research efforts aimed at damage tolerant naval steels, friction stir welding of high strength steels, novel concepts for materials systems to enable hypersonic vehicles, the Dynamic 3-D Digital Structures program and others. From October 1999 through October 2002, she researched high temperature materials for the Naval Surface Weapons Center – Carderock Division (NSWC-CD) with a joint appointment to ONR supporting research in dielectric materials and the control of spins in semiconductors with the Defense Advanced Research Project Agency. Prior to ONR and NSWC-CD, Dr. Christodoulou held several positions in industry and the naval research community. These include Materials Researcher for Martin Marietta Laboratories investigating processing- performance relationships in intermetallic systems for high temperature applications and ceramic dielectrics for energy-dense capacitors; Metallurgist for the Naval Research Laboratory for environmental effects on performance; and Associate Director for Structural Metallics at ONR- Global, a part-time international technical liaison position while studying toward her doctorate degree. Dr. Christodoulou earned her bachelor's of science degree with honors in metallurgical engineering from the University of Texas at El Paso in 1988, her master's of science degree in materials science and engineering from the Johns Hopkins University in 1995, and her Ph.D. in materials science from Imperial College, London under the guidance of Prof. Harvey Flower in 1999. She has been recognized with three Exception Performance Awards and two Certificates of Commendation during her tenure with the Department of the Navy, and The Technical Cooperation Program Achievement Award in 2009.

Dr. Mark VanLandingham

Mark VanLandingham is the Division Chief of the Materials and Manufacturing Science Division, US Army Research Laboratory. I have over 15 years of post-PhD experience in scientific and engineering research, all in the government sector. Over the past 2 years while serving as the Associate Director, I have greatly extended my influence across the organization, overseeing our extensive mission research portfolio including current year execution and out-year planning, serving as resource manager overseeing revenue and execution of a $200M+ annual budget across 28 operating units, and overseeing many other operational aspects, such as infrastructure investments, administrative policies and procedures, and development of web-based tools for information management and reporting. I also serve on both formal and informal working groups and committees

involved in various operational and strategic planning aspects across the organization. As a researcher, I have developed and led research thrusts at the intersection of Engineering Mechanics and Materials Science, from nano- and microscale contact mechanics to the creation of novel materials. As a supervisor, I have developed new core competencies and expanded research capabilities by successfully advocating for research and facilities investments, through holistic personnel management strategies, and by developing extensive internal and external partnerships. My role as a mentor has had many facets – as an experienced manager mentoring colleagues; as a supervisor mentoring supervisory and non-supervisory direct reports, including scientists and engineers, technicians, and administrative personnel; as an experienced researcher mentoring junior and senior research staff members including students, postdocs, contract staff, and government researchers; and as an adjunct faculty member, teaching courses and serving as a co-advisor and/or a primary committee member for PhD students.