

Opening Remarks

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Good morning, I am Anne Kinney, the Assistant Director of Mathematical and Physical Sciences. It is my pleasure to welcome you to the second day of the annual NSF Nanoscale Science and Engineering Grantees Conference. My counterpart from Engineering, Dawn Tilbury, was here yesterday welcome you, and I think she gave you the latest news about our budget. NSF was really grateful to Congress last year for providing us with the highest budget ever received for the agency, \$8.1 billion. We're hopeful that we will have a budget for FY2020 before the end of the current CR, which is scheduled for December 20.

Nanoscience and nanotechnology research has long been and continues to be a hugely important area of investment for NSF. The technological advancements that are enabled through breakthroughs in nanoscience have wide-ranging impacts on multiple industries, including **advanced manufacturing, computing, remote sensing, synthetic biology**, and more. *In Mathematical and Physical Sciences, the combined active investments in nano-related research from the Divisions of Chemistry, Materials Research, and Physics totals over a billion dollars, which is a significant investment.* Just as nanoscience works on the small scale to have big impacts across scientific disciplines, the NSF investment in nano ranges from our smallest grants made to individual investigators to our large centers and research infrastructure programs.

This year the National Nanotechnology Initiative is celebrating the 15-year anniversary of its authorization. *Since the establishment of the National Nanotechnology Initiative, the continuing MPS investment in nano has become part of our "DNA", impacting the majority of programs across three out of the five MPS Divisions, and being relevant to the remaining two, while also being well aligned with work done in other Directorates across NSF.* NSF is really proud to have been a part of this initiative from the beginning and to have seen so much progress come from our continued investments in the nanosciences. NSF is about to celebrate an anniversary of our own – 2020 will be the 70th anniversary since President Truman signed the National Science Foundation Act of 1950 authorizing the creation of the Foundation. We will be commemorating this

historic year with a symposium at NSF on February 6-7, 2020. The event will feature a gathering of all of the living NSF Directors, coming together along with scientific luminaries and up-and-coming researchers from all fields to reflect on the history of NSF and look towards the future of the agency. The event will be available to stream online and I hope that you will all be able to take some time to join us, as all of you here today are part of the NSF story.

Meanwhile, it's very exciting to see some of the "grand challenges" that you'll be discussing throughout today: **sustainability**, **biosensing**, **metamaterials**, and **geoscience applications**, to name a few. These are all critically important areas for today's researchers, and they each offer unique opportunities for **convergent research**, examining questions on the nanoscale.

Dawn spoke extensively about **convergence** yesterday, but I want to reiterate that convergence is a topic of real importance for NSF. A major emphasis of NSF's cross-cutting 10 Big Ideas is to enable people from different fields to reach outside of their disciplines and work together to tackle our current national challenges. In many cases, the concept of nanoscience can serve as the glue for these cross-disciplinary projects, bringing together convergent areas of research to develop new approaches and applications in multiple domains of science and engineering.

I'm also especially glad to see that there is an entire afternoon session today devoted to communicating the importance and the societal impact of nanoscience to the wider public. Communication of our science is something that NSF is actively working to strengthen, and we really need the help of the people in this room – our PIs - to do it. It's great to see representatives from the Boston Museum of Science will be presenting on this topic. Carol Lynn Alpert recently came and gave a wonderful talk at the fall meeting of our MPS Advisory Committee; they are doing terrific work at that institution.

Last year saw the launch of the National Quantum Initiative. OSTP is closely coordinating its implementation with NSF, DOE, and other agencies. This latest push to advance the frontiers of quantum technology brings with it a need for advanced nanoscience research to enable the quantum sensors, networking, and communications of the future. In both quantum science and nanoscience there is also a critical need for the development of an educated workforce to engage in research over the next decades. It is estimated that 2 million nanotechnology jobs will be needed by 2020 in the United States alone. The development of this workforce is critically important to the mission of MPS and to NSF overall.

Thank you all for being here. I look forward to hearing about what I am sure will be a very engaging and innovative day of presentations and discussions.