Call for Papers
Low-Dimensional Materials and Devices 2021 (OP106)
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Low-dimensional material systems possessing at least one of their dimensions in the nanometer scale offer intriguing physical properties and undiscovered pathways toward revolutionary new device concepts for flexible and transparent electronics, photonics, quantum computing, and other advanced applications. Fabrication of quantum dots, nanowires, ultra-thin films, and heterostructures result in building blocks that reveal a wealth of interesting physical properties including quantum phenomena. Control of synthesis and processing at the nanometer scale offers unprecedented opportunities to tailor microscopic and macroscopic physical properties of such material systems. To further pursue these tremendous opportunities, many fundamental questions need to be addressed and technological barriers need to be overcome. This conference provides a forum for the presentation and discussion of synthesis, processing, and characterization of low-dimensional materials tailored to their unique and peculiar physical properties. Design, fabrication, and characterization of novel device platforms that employ low-dimensional materials are also of interest, as well as interfacing and integration of such devices toward novel electronics, photonics, sensors, and energy conversion and storage.

Topics of interest include:
• fabrication of zero-dimensional (core-shell nanoparticles, quantum dots), one-dimensional (nanowires and nanorods), and two-dimensional (van-der-Waals layers such as transition metal dichalcogenides), and their device integration
• templated, catalyzed and uncatalyzed, field assisted, locally heated synthesis methods of low-dimensional materials
• self-limiting deposition technique such as atomic layer deposition (ALD) that can produce ultrathin and conformal thin film structures for many applications including thin film devices, display technology, energy storage and capture, solid state lighting
• exploration of strain and extended defects effect on synthesis and spatial ordering of nanoscale structures and on their optical and transport properties
• introduction of electrically/optically active impurities and their roles in low-dimensional structures; dopant spatial distributions and segregation
• electrical contact formation and interface properties between nanoscale structures and metal contacts
• nanoscale synthesis compatible to and integral onto CMOS devices; scalable and mass-manufacturable interfacing for electronics, photonics, optoelectronics, sensing and energy conversion
• 3D heterogeneous integration, application of advanced patterning techniques for positioning and dimension control of nanostructures, integration with MEMS
• electrical, optical, mechanical and structural characterization, including in-situ and in-operando techniques of the low-dimensional structures and device platforms; correlation of composition, microstructure, and defects to the material physical properties and device performance.

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Contact information

For questions about submitting an abstract, or the meeting, contact the Program Coordinator. For questions about your manuscript, contact AuthorHelp@spie.org.

Abstracts Due: 3 FEBRUARY 2021
Manuscript Due Date: 7 JULY 2021

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