Special Issue

Synthesis, Properties and Applications of Germanium Chalcogenides

Message from the Guest Editor

Germanium (Ge) chalcogenides are characterized by unique properties which make these materials interesting for a very wide range of applications, from phase change memories to radio frequency (RF) switches and ovonic threshold switches, from photonics to thermoelectric and photovoltaic devices. By employing electric or laser pulses, Ge chalcogenide materials undergo a large change of the electrical and/or optical properties, enabling their use as storage media, as in phase change optical and electronic memories, or as fast selectors. In many cases the physical properties can be finely tuned by changing the Ge amount, which plays a key role in determining the applications, performance and reliability of the devices. Ge chalcogenides are also characterized by low lattice thermal conductivity and high point defect concentration, making them also promising candidates for lead-free thermoelectric applications. This special issue will cover advances in Ge chalcogenides synthesis techniques, including nanostructures and superlattices, in the understanding of the unique properties of Ge chalcogenides, and in devices for optical, electronic and thermoelectric applications.

Guest Editor

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Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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