

Special Issue on

Novel Synthesis and Applications of Metal, Metal Oxides (MOs), and Transition Metal Dichalcogenides (TMDs) for Energy, Sensing, and Memory Applications

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Due to their unique structural and electronic properties, low dimensional nanostructures are potential candidates for various electronics and optoelectronics applications. Following the discovery of graphene, the last decade has seen other structures such as Metal Oxides (MOs), Transition Metal Dichalcogenides (TMDs), and MXene attracting considerable attention in the field of material science and nanotechnology due to their distinctive physical and chemical properties. The complex nature of electronic device structures requires an understanding of not only the output characteristics, but also the in-depth relationship between its structural chemistry and physics which dictates the device's behavior. Open questions such as "how do the composition and electronic properties of each constituent 'at the atomic level' amend the device performance?" will help us understand the properties and output behavior of these materials.

This special issue aims to provide an overview of different synthesis techniques for multifunctional materials in the field of energy, sensing, and resistive random-access memory (ReRAM) applications. Its main objective is to provide an opportunity for interdisciplinary researchers from physics, chemistry, engineering, and materials science to share their ideas and recent work that includes the synthesis and deep understanding of devices that help us to foresee the behavior of these submicron and/or nanostructured-based metals, MOs, and TMDs for the above-mentioned applications.

Potential topics include but are not limited to the following:

- ▶ Nano-/microstructures of metal, Mos, and high-k dielectrics
- ▶ Plasmonic (or metal like) materials (e.g., silver and gold) that show metal-like optical properties in the visible wavelength range
- ▶ MO composites and/or plasmon-enhanced photocatalysis for energy transfer and hot electron transfer for various applications such as organic degradation, antimicrobial applications, and water splitting
- ▶ Density functional theory (DFT) studies on homogenous and heterogeneous catalysis, including surface chemistry
- ▶ Biochemical sensors: surface-enhanced raman spectroscopy (SERS) and potentiometry
- ▶ Memristive devices and neuromorphic computing

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/amse/nmmm/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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Submission Deadline

Friday, 12 April 2019

Publication Date

August 2019