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Metal Oxide Nanocomposites and Thin Films: Fabrication, Properties, and Applications

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Message from the Guest Editor

Due to an array of excellent physical and chemical properties, metal oxides are expected to have a key role in future electronic devices across electronics, optics, catalysis, and energy storage. Compared to thin film forms, nanocomposite materials offer enhanced performance characteristics and high tunability. In both forms, metal oxides are successfully employed in a variety of applications, with well-known examples including TiO_2 nanocomposites for photocatalysis and batteries; ZnO nanocomposites in optoelectronics, sensors, and lasers; and thin films of indium tin oxide (ITO) and aluminum-doped zinc oxide (AZO) in transparent conducting electrodes in solar cells and displays. Metal oxides are expected to provide more applications in disruptive technologies, bringing novel opportunities to various industries. Meeting ambitious goals always requires a continuous push toward optimizing these materials and their integrability into devices, for which minding sustainable approaches (such as solution-based and low-temperature processing) and the use of non-critical elements is preferred.

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Message from the Editor-in-Chief

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