Special Issue

Advances in Thin Films Materials: Properties, Characterization, Physical Vapor Deposition and Application

Message from the Guest Editors

The mechanical and functional properties of thin-film materials generally differ substantially from those of their bulk counterparts due to the well-known defect, strain, dimensional and interface effects. For example, thin-film materials have higher strength and wear resistance, owing to the presence of nano-sized interfaces. Additionally, interface-related strains can induce strong interplays between the crystal lattice, orbital, charge and spin degrees of freedom, which create emerging electronic or magnetic states and consequently lead to novel functionalities. These unique properties enable an incredible expansion of technological applications of thin-film materials in a range of fields, from electronics to biomedicine to optical devices. Recent advances in physical vapor deposition (PVD) have furthered the compositional and structural design of thin films. Introducing structural/compositional complexity during PVD involves profuse interface and phase coupling, and thereby significantly enhances thin films' properties.

Guest Editors

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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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