

Special Issue Reprint

Active Organic and Organic-Inorganic Hybrid Coatings and Thin Films

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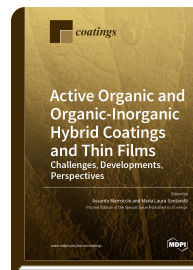
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Active (also called “smart”) coatings and thin films are defined as those that are capable of sensing their environment and appropriately responding to that external stimulus. This Special Issue “Active Organic and Organic-Inorganic Hybrid Coatings and Thin Films: Challenges, Developments, Perspectives” collected a series of papers that outline the current frontiers in the development of smart coatings and thin films for corrosion and other types of materials applications. The first four papers focus on novel discoveries on coatings with corrosion protection properties. These include environmentally-friendly polyurethane loaded with cerium nitrate corrosion inhibitor for mild steel protection, hot-pressed organic polymer coatings for the protection of pre-treated aluminum alloy surfaces exposed to NaCl aqueous solutions, functional epoxy coating with modified functional TiO₂ for steel substrates protection, and hybrid composites against the thermo-oxidative corrosion of the metal parts of the internal combustion engines, turbines, and heaters. The next paper explores the potential of organic polymer/ceramic composite coatings to enhance the scratch resistance of typical floor laminates. The next three papers highlight other types of smart coatings and thin films, including low-temperature curable hybrid dielectric materials for field-effect transistors, bilayer antireflective coatings for optoelectronic devices, and organic polymers as the thin-film component for enthalpy exchanger systems in air conditioning applications. The final two papers focus on important research specific to coatings that serve as protection and preservation cultural heritage materials.

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