

Internal Webinar

Electrodeposition of Metal-Organic Framework Thin Films: Design, Fabrication, and Applications

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Metal-organic frameworks (MOFs) are versatile hybrid materials consisting of metal nodes and organic linkers, offering potential applications in gas storage, catalysis, sensing, optoelectronics, and magnetism. The work mainly focuses on the fabrication of various MOF thin films using the electrodeposition technique for different applications. A bimetallic Co-Ni(TCNQ)₂(H₂O)₂ MOF thin film was developed, exhibiting enhanced oxygen evolution reaction (OER) activity through distal synergy. Additionally, lanthanide-based carboxylate MOFs were synthesized, demonstrating thermally driven conformational twist and tunable luminescence properties. Additionally, M-TCNQ MOF thin films were successfully fabricated on flexible PET substrates and further explored for triboelectric nanogenerator (TENG) applications. In this talk, I will provide an overview of the versatility of electrodeposition as an effective strategy for designing multifunctional MOF thin films and discuss their potential applications across diverse technological domains.

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11:30 Hrs

