

Designing a high barrier, tough and self-repairing epoxy composite coatings with Ce-MOF decorated 2D α -ZrP smart nanofiller

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Abstract Synergistical passive barrier enhancement and active self-healing has been an emerging tactic for developing prominent anti-corrosion coatings. Herein, a cerium/2-methylimidazole metal-organic framework (Ce-MOF) was that is in-situ grown on ultrathin α -ZrP nanosheets with outstanding dispersibility. The parallel arrangement of α -ZrP-based nanosheets within the epoxy matrix was driven by shear force from blade-coating technology optimizing the coating's physical barrier and self-repairing capability. This advancement may herald a new era in designing smart coatings and offering potent protection against diverse corrosion types such as filiform corrosion. (word limit 300 words)

Keywords 2D α -ZrP; Metal-organic framework; Epoxy coating; Filiform corrosion
Self-repairing

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