

Graphene-Based Nanocomposites as Ecofriendly Antifouling Surfaces

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Abstract : After the prohibition of tin-based fouling-prevention coatings in 2003, the researchers were directed toward eco-friendly coatings. Because of their nonstick, environmental, and economic benefits, foul-release nanocoatings have received a lot of attention. They use physical anti-adhesion terminology to deter any fouling attachment. Natural bioinspired surfaces have micro/nano-roughness and low surface free energy features, which may inspire the design of dynamic antifouling coatings. Graphene-based nanocomposite surfaces were designed to combat marine-fouling adhesion with ecological as well as eco-friendly effects rather than biocidal solutions. Polymer-graphene nanofiller hybrids are a novel class of composite materials in fouling-prevention applications. The controlled preparation of nanoscale orientation, arrangement, and direction along the composite building blocks would result in superior fouling prohibition. This work represents foul-release nanocomposite top coats for marine coating applications with superhydrophobicity, surface inertness against fouling adherence, cost-effectiveness, and increased lifetime.

Keywords : foul-release nanocoatings, graphene-based nanocomposite, polymer, nanofillers

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