Abstract

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Smart Coating Material a Comparative Study of the Economic Feasibility of Employing Self-Healing and Self-Cleaning Building Coatings

Biological systems have the ability to sense, react, regulate, grow, regenerate, and heal. Recent advances in materials chemistry and micro and nano scale fabrication techniques have enabled biologically inspired materials systems that mimic many of these remarkable functions. Intelligent smart materials, which may combine the functions of sensor, rely on their capabilities to respond to physical, chemical, mechanical stimuli by developing readable signals. There are huge developments that aim to bring much functionality to polymer-coating systems with nanotechnology. This research will cover recent advances in the field of smart polymeric structures that are used in protective coatings in terms of stimulus and response, sensing mechanisms, and current potential applications. Self-cleaning surfaces have excelled in recent years in energy and environmental fields. The development and application of self-cleaning treatments on historical and architectural stone surfaces could be a significant improvement in conservation, protection and maintenance however corrosion-resistant self-healing coatings have witnessed strong growth and their successful laboratory design and synthesis categories them in the family of smart/multi-functional materials. This research will present a comparative feasibility study between self-cleaning coatings and ordinary coatings to see which one could be more feasible and reduce the annual cost on the long run.