Applications of Graphene Modified Titanium Nano Macromolecule Coatings

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Abstract

By using mechanochemical solid-liquid reaction methods, a variety of functional coatings were synthesized with the formulation of nano-organic titanium precursor polymer, titanium nano macromolecular alloy (GTMA) polymers, graphene, resins, catalysts, co-solvents and other materials. Testing results indicated that the graphene modified titanium nano macromolecule alloy coatings exhibited distinguished properties, such as heavy duty corrosion-resistance, excellent anti-static performance, and high thermal conductivity coefficient. It leads to a wide applications into the markets of petroleum, chemical, metallurgical, transportation energy, and oceanographic industries etc.

References

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Tables and Figures

Table 1: Results of heat exchanger GTMA Coating performance

Items	Testing Standards	Units	Results
Thermal conductivity coefficient	GB/T 4272	W/m·K	5
Fouling coefficient	GB 50050	m2·K/W	0.008
Contact angle	GB/T 30447	°	86
Wear resistance	GB/T 1769	g	No change

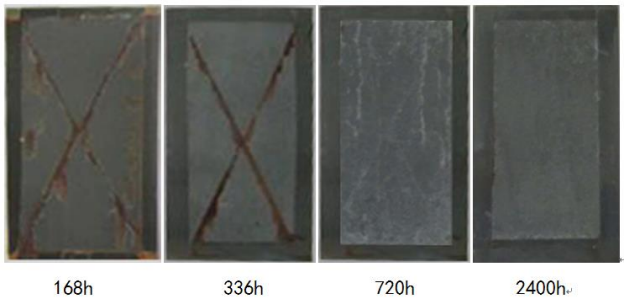

Figure 1: The self-healing process in salt spray testing.

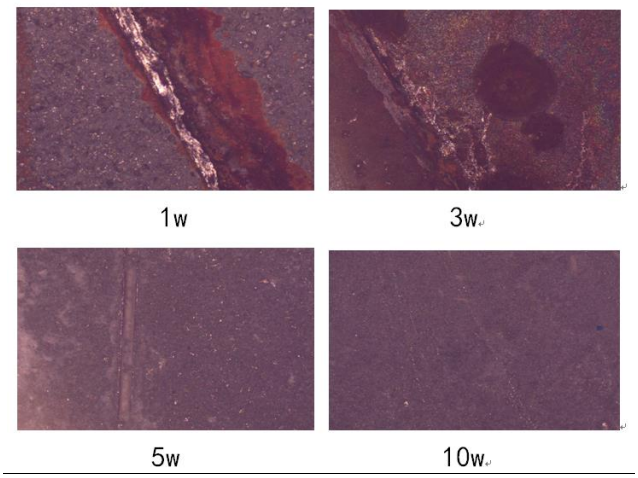

Figure 2: SEM of self-healing process in GTMA coatings