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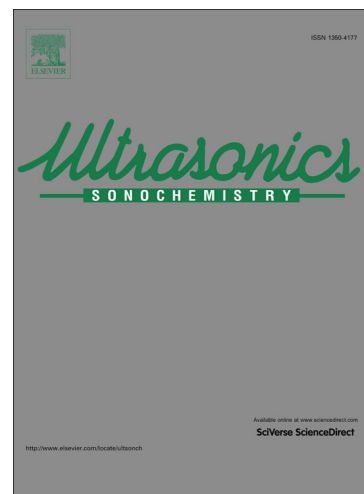
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Simple and fast preparation of graphene oxide@ melamine terephthaldehyde and its PVC nanocomposite via ultrasonic irradiation: Chemical, mechanical and thermal resistance Study

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Abstract

Melamine terephthaldehyde modified graphene oxide (MTR-GO) with optimum content was easily prepared via ultrasonication method and used as anti-corrosion additive for Poly (vinyl chloride) (PVC). The effects of ultrasonicated MTR-GO on the mechanical, chemical and thermal resistance of the PVC were thoroughly studied. Change percentage of tensile strength and weight change percentage of PVC (P) and PVC/MTR-GO nanocomposite (PN) in acetone and sodium hypochlorite (NaClO) media at two different exposure temperature (20°C and 50°C) were examined. The PN sample showed lower change loss percentage of tensile strength in acetone uptake as compared with P sample at 20°C. In higher temperature (50°C), P sample was decomposed while PN still showed tensile data. The change loss percentage in tensile strength of PN sample showed 13% change at 50°C in sodium hypochlorite while P sample showed 63% change for the parameter. Protective behavior of MTR-GO nanofiller on PVC matrix against thermal HCl releasing was investigated by Congo red tests. The results showed that the nanocomposite release less amount of HCl as compare to the neat PVC.

Keywords: Corrosion effect; Polyvinyl chloride; Nanocomposite; HCl releasing

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