Facile Preparation of AT-PEG Polymer and Its Corrosion Inhibition Performance

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Aniline tetramer grafted polyethylene glycol methyl ether (AT-PEG) was obtained from aniline tetramer (AT), polyethylene glycol (PEG) and toluene-2,4-diisocyanate (TDI). Then the structure of AT-PEG was characterized by fourier infrared spectroscopy (FT-IR) and nuclear magnetic resonance (¹H NMR). The corrosion inhibition performance of AT-PEG for Q235 carbon steel in 1.0 M HCl solution has been investigated using static weight loss, electrochemical impedance spectroscopy (EIS) and polarization curves, respectively. The results proved that the corrosion inhibition efficiency increased with the increase of AT-PEG, and the corrosion inhibition efficiency of hydrochloric acid solution reached its maximum of 92.50% in the concentration of 100 mg/L. Here, the results of static weight loss, electrochemical impedance spectroscopy (EIS) and polarization curves were in good agreement with each other.

Keywords: Aniline tetramer; Carbon steel; Inhibitor; Static weight loss; Electrochemistry; Hydrochloric acid solution

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