Electrodeposition of substituted polyaniline and their composite coatings on AL-2024.

kunal shah[1] and Jude iroh[1]

[1]University of Cincinnati
498 rhodes hall,MO box-0012
University of Cincinnati
Cincinnati, oh 45221
USA

Poly (N-ethyl aniline) and Poly (O-anisidine) coatings were electrodeposited onto Al-2024 by using cyclic voltammetry. Fillers such as carbon black and carbon fibers were used to make the composite coatings. These coatings were formed in aqueous solution of oxalic acid. The concentration of monomer and oxalic acid were kept constant at 0.1M and 0.3M respectively. The formation of the polymer and their composite coatings were monitored by cyclic voltammetry and infrared spectroscopy. The coatings were characterized by infrared spectroscopy, cyclic voltammetry and UV/Vis spectroscopy. The corrosion resistance of the film was evaluated by DC polarization studies. Preliminary DC polarization results show that Poly (N-ethyl aniline) has a corrosion rate of about 0.004 mmpy, which is significantly lower (about 1 order of magnitude) than that for the non-coated Al-2024.