

CORROSION BEHAVIOR OF COPPER–ALUMINA NANOCOMPOSITES IN DIFFERENT CORROSIVE MEDIA

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ABSTRACT

The present study aims to investigate the corrosion behavior of the Cu–Al₂O₃ nanocomposite, with various alumina contents, in both 3.5wt.% NaCl and 0.5 M H₂SO₄ solutions using electrochemical technique. The Cu–Al₂O₃ nanocomposites with different weight fractions of Al₂O₃ were produced by powder metallurgy method. The Cu–Al₂O₃ nanocomposite powders were prepared by mechanochemical technique. The structure and characteristics of the powders and composites produced from this route were examined by XRD, SEM, EDS and metallography. The results showed that, the alumina of nano-sized particles was formed and dispersed within the copper matrix. It was found that the Cu–15% Al₂O₃ nanocomposite had the lowest corrosion resistance. All specimens exhibited lower corrosion current density in 3.5wt% NaCl solution than that in 0.5M H₂SO₄ solution.

KEYWORDS: Mmcs, Nanocomposites, Corrosion, Microstructural Analysis