Corrosion Inhibition Activity and Adsorption behavior of 3-Amino-1, 2, 4-Triazole on copper

Yunxiao Wan, Zhenlan Qin, Qunjie Xu*, Mojing Chen, YuLin Min, Meiming Li

Shanghai Key Laboratory of Materials Protection and Advanced Materials in Electric Power, Shanghai Engineering Research Center of Energy-Saving in Heat Exchange Systems, Shanghai University of Electric Power, 2588 Changyang Road, Yangpu District, Shanghai 200090, China
*E-mail: xuqunjie@shiep.edu.cn

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In this paper, a borax media was introduced to improve inhibition effect of 3-amino-1, 2, 4-triazole (ATA) towards the corrosion of copper in basic solution. Results showed that the inhibition efficiency is enhanced to 97.65% significantly at an ATA concentration of 30 mg·L⁻¹. The correlation analysis of electrochemical and photoelectrochemical properties indicated that the ATA is a great corrosion inhibitor for copper in the borax buffer solution. Surface enhanced Raman scattering (SERS) spectroscopy revealed that the inhibition of copper corrosion is mainly due to enhancing adsorption of ATA molecules on the surface of copper. The typical of chemisorptions was found to obey Langmuir’s adsorption isotherm, which is consistent with the quantum calculation.

Keywords: Copper; Photoelectrochemistry; SERS; Corrosion; Inhibitor

FULL TEXT