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### Evaluation of the best corrosion inhibitors used with copper artifacts to protect the silver artifacts

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**Abstract:**The research aimed to evaluate the efficiency of three compounds from preferred corrosion inhibitors of copper artifacts to be used to protect silver artifacts. The compounds are Benzotriazole (BTA), L-methionine (Met.) and Sodium decanoate ( $\text{NaC}_{10}$ ), each inhibitor was tested with and without Nano-alumina. The evaluation of these compounds was performed using the electrochemical measurements (Potentiodynamic (pt) and Electrochemical Impedance Spectroscopy (EIS)) and accelerated corrosion test with  $\text{H}_2\text{S}$  gas and water resistance test within enclosed chamber. The treated silver coupons with studied inhibitors were examined using microscopes SEM, PM and AFM to appear some important features of the formed film. The study was carried out on manufactured coupons of the silver alloy with copper. The results revealed that BTA and  $\text{NaC}_{10}$  in presence and absence Nano-alumina have good efficiency in the protection of the silver coupons in the corrosion conditions used in the tests.

**Keywords:** the efficiency, Benzotriazole, silver artifacts, Accelerated aging and AFM.

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