INVESTIGATING AND PROTECTING BRONZE ARTIFACTS

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Bronze artifacts are usually covered by a corrosion product called patina. Once formed the bluish or greenish patina layer is stable and will protect the bronze object from the environment conditions.

This is a theoretical study that refers to the general approach in dealing with a bronze artifact from the moment it was dug out all the way through the process of being protected against corrosion.

Determining the composition of the metal alloy and of it's patina is important from a reproducibility stand point. The methods used in this first steps are non destructive investigation techniques (micro Raman, SEM, ESD, etc) and chemical or electrochemical ways of patinating the bronze.

From a corrosion standpoint this study focuses to demonstrate through examples chosen from literature the behavior of two types of non toxic classes of corrosion inhibitors and their efficiency: a set of five amino acids Arginine (Arg), Cysteine (Cys), Glycine (Gly), Lysine (Lys) and Valine (Val) and another set of four substances ending in –zole: 4-methyl-1-(*p*-tolyl)-imidazole (TMI), 1-phenyl 4-methyl-imidazole (PMI), 2-mercapto 5-R-acetylamino-1,3,4-thiadiazole (MAcT), 2-mercapto 5-R-amino-1,3,4-thiadiazole (MAT), compared to benzotriazole (BTA).

As a conclusion cysteine is the best corrosion inhibitor from the amino acids group and the benzotriazole (BTA) from the "-zole" group.

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