

Application of Microorganisms in Bronze Artifact Corrosion and Prevention

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Abstract: Bronze artworks, noted for their exceptional craftsmanship, possess substantial historical, artistic, scientific, and socio-cultural worth. Nevertheless, these artifacts are susceptible to erosive factors such as environmental acidic constituents, air pollutants, and microbial activities, all of which lead to their deterioration and corrosion.

Since the late 19th century, research on the corrosion mechanisms of bronze has mainly concentrated on chemical and electrochemical processes. Although the influence of microorganisms has been recognized, it has not gained adequate attention in the conservation of metal artworks. Microorganisms, being the key participants in the elemental cycling of the planet, can notably contribute to corrosion. Their involvement modifies the electrochemical behavior at the interface between the metal and the corrosive medium. Hence, studying the interactions between microorganisms and metals is of crucial importance, as it not only provides a comprehensive comprehension of the corrosion process but also offers potential for developing green and sustainable conservation approaches.

This paper aims to summarize the progress made both domestically and internationally in understanding microbial influences on bronze corrosion and prevention. The objective is to advance scientific and technological methods for the preservation of cultural relics in China.

Keywords Bronze corrosion, Microorganisms

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