Analytical and Experimental Methods for the Corrosion, Aging, and Weathering of Non-metallic Cultural Relics, a Comprehensive Review

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Abstract The corrosion of cultural relics refers to the reactions that occur between materials and their environment, leading to gradual destruction and degradation. The weathering and aging of cultural relics are also considered forms of corrosion. While corrosion is usually associated with metals, non-metallic relics are also susceptible. Items such as the painted figurines, earthen sites, and stone artifacts at Emperor Qinshihuang's Mausoleum Site Museum undergo corrosion, weathering and aging. Therefore, we have outlined the analytical and experimental methods for the corrosion of cultural relics to lay a preliminary foundation for the study of the corrosion of non-metallic relics in museums. According to the materials of cultural relics collected and unearthed by the Qin Mausoleum Site Museum, non-metallic cultural relics that are prone to corrosion mainly include pottery, jade and stone artifacts, and earthen sites. The corrosion process of these non-metallic relics can be detected through various analytical methods. Raman analysis can be used to identify the molecular structure of materials or for chronological analysis. This article aims to comprehensively understand and explore the mechanisms, conditions, and conservation needs of cultural relic corrosion by integrating and sorting out various analysis and experimental methods. It proposes a possible normative research method system for the Qin Mausoleum Site Museum to conduct research on non-metallic cultural relic corrosion, aging, and weathering.

Keywords Corrosion of Non-metallic cultural relics, Weathering and aging, Analytical and Experimental methods, Raman analysis

Reference

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