# Discussion on the Current Status and Development Trends of Corrosion Inhibitors for Metallic Cultural Relics Based on the Standard Formulation of ' Requirements and Evaluation Methods for Iron Cultural Relics Inhibitors'

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**Abstract** The application of new corrosion inhibitors in the conservation of metallic cultural relics has been limited, primarily due to the lack of standardized testing and evaluation methods, as well as the absence of long-term application data on actual artifacts. The formulated standard, 'Requirements and Evaluation Methods for Iron Cultural Relics Inhibitors' specifies the applicability and effectiveness requirements for corrosion inhibiting materials of iron relics and describes the methods for their evaluation. This standard provides a set of standardized testing and evaluation methods for assessing the performance of corrosion inhibitors for metallic relics. The standardized evaluation data can not only serve as a qualification criterion for the application of new corrosion inhibitors in the conservation of metallic relics but also facilitate the gradual establishment of a database on the applicability, effectiveness, and long-term performance of corrosion inhibitors. The development of this database will allow for more targeted corrosion mitigation strategies for different types of metallic relics, and, with the support of materials genomics research methods, will further promote the research and development of new conservation materials for cultural heritage protection. In the future, the development of functionalized coating systems with self-warning and self-repairing capabilities, through methods such as loading corrosion inhibitors and carbon quantum dots into microcapsules, will be a key direction in the conservation of metallic cultural relics.

**Keywords** metallic cultural relics; corrosion inhibitors; evaluation methods; database; functionalized coating

## Reference

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