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## 青铜文物的腐蚀研究——高放废物处置系统的人为类似物研究实例

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**摘要** 研究了在湖北、江西、广西、陕西和北京收集到的青铜文物样品的化学成分、结构特征和样品所在地区的环境条件。研究表明:青铜文物随着时间不断腐蚀,其腐蚀层至少由两层组成,即氧化物和碳酸盐层组成,个别样品出现主要由物理作用产生的疏松亚层,有些样品还有SnO<sub>2</sub>亚层。腐蚀层厚度因样品所处的环境条件不同而变化,干旱和潮湿地区样品腐蚀层厚度分别为50~260μm和300~800μm。就青铜抗自然腐蚀而论,其腐蚀产物如孔雀石、锡石等都是稳定的矿物,可保护内部的金属在地下埋藏环境中不被继续腐蚀,青铜是适用于作高放废物地质处置系统中废物罐的材料。

关键词 [青铜文物](#) [腐蚀](#) [高放废物处置](#) [废物罐](#)

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## Study on Corrosion of Bronze Relics——An Example for Anthropogenic Analogue Study on Disposal System of High-level Radioactive Waste

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**Abstract** The paper presents composition analyses and structure observation of bronze relic samples which were collected from Hubei, Jiangxi, Guangxi, Shaanxi, Beijing, environmental conditions of the sites where the samples were taken. Research results indicate that the bronze relics can be continuously corroded with time, the corrosion layer of bronze relics consists of at least two sub-layers, such as oxide and carbonate sub-(layers.) Sometimes, there is corrosion sub-layer mechanically such as loose sub-layer on a (specific) sample. And SnO<sub>2</sub> oxide sub-layer also occurs in a few samples. The thickness of bronze corrosion layers is varied with the different climate environments in which the samples studied were taken, and their thickness are 50~260 μm and 300~800 μm in the dried and humid climate region, respectively. As far as the natural corrosion-(resistant) is concerned, the bronze is available for material of canister of high-level waste (HLW) repository system.

**Key words** [bronze relic](#) [corrosion](#) [HLW disposal](#) [canister](#)

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