

## 缓蚀剂对铜作用的激光扫描微区光电化学研究

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**摘要** 采用激光扫描微区光电化学显微技术(PEM)对不同浓度下的苯并三氮唑(BTA)及其衍生物4-羧基苯并三唑甲酯与5-羧基苯并三唑甲酯的混合物(CBTME)在硼砂缓冲溶液(pH9.2)中对铜电极的缓蚀作用作了比较研究。研究发现当电位正向扫描至某一电位时,一定浓度的BTA或CBTME作用下,铜电极光响应由p-型转化为n-型,并可依此判断缓蚀剂的缓蚀性能,n-型光响应越大,缓蚀剂的缓蚀性能越好,与循环伏安光电流及交流阻抗测试的结果相一致;实验还发现,影响缓蚀剂对铜作用的过程不仅与缓蚀剂本身有关,还与电极电位有关。在一定的电位与一定的缓蚀剂浓度下可观察到铜电极表面共存着p-型和n-型区域及p转n的过程,因此可从微观上观察到缓蚀剂与铜表面作用的过程,为缓蚀剂的应用建立了良好的理论基础。

**关键词** [缓蚀剂](#) [铜电极](#) [苯并三氮唑](#) [苯并三唑P](#) [甲酯](#) [激光扫描微区光电化学显微技术](#)

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## Study on copper surface in buffer-borax solutions with BTA and its derivatives CBTME by PEM

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**Abstract** In-situ photoelectrochemical microscopic method (PEM) has been used to characterize the spatial variation of the film formed on the copper surface in buffer-borax solutions (pH 9.2) with different concentration of benzotriazole (BTA) and combined benzotriazole methanoic acid ester (CBTME). It is shown from PEM that the transition of photocurrent on copper electrode from p-type to n-type at the action of the certain amount of the inhibitors. the more concentrated the inhibitors, the more the n-type photoresponse and the more effective the inhibition. The inhibition action is not only related to the properties of inhibitors but also to the applied potential. At a certain potential the coexistence of the p-type and n- type zones at the different position on the copper electrode and the process of the transition of the photocurrent from p-type to n-type can be observed.

**Key words** [CORROSION INHIBITORS](#) [BENZOTRIAZOLE](#) [BENZOTRIAZOLE P](#) [METHYL ESTER](#)

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