Electrogeneration of Diiodoaurate in Dimethylsulfoxide on Gold Substrate and Localized Patterning

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A localized etching of gold surface by scanning electrochemical microscope technique is presented where a dimethylsulfoxide-based electrolyte charged with iodine is used. The electrogenerated triiodide ion at the platinum ultramicroelectrode tip (feedback mode) acts as an oxidant for gold surface. The effects of electrode diameter and the bias time have been investigated. The approach curve method was used to hold the electrode tip close to the gold surface. A scanning electron microscope is used to observe the etched gold surfaces where disk-shaped dots are generated. The diameter of these holes depends directly on the Pt electrode diameter and the bias time.

Keywords: gold etching; iodine-iodide; DFT; SECM; EQCM; ultramicroelectrode

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