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Rapid electrodeposition of gold dendrites in aminosilane-contained electrolyte and their applications

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Nanotechnology brought breakthroughs in scientific development. Catalytic ability of gold was neglected before the appearance and analysis of gold nanostructures in the 80s. Gold nanostructures get much attention because of its large compatibility in catalyst, molecular sensing and also more other prospective fields. For better control of performance, shape-controlled gold nanostructures are one of the targets in the industry in this decade. In this paper, a template-less method is introduced to fabricate anisotropic grown gold nano-dendrites by one-step electrodeposition in (3-Aminopropyl)trimethoxysilane (APTS)-contained electrolyte. Growing direction of branch and trunk of the dendrites are controlled to provide specific shape and morphology that can enhance their catalytic ability. The kinetics and mechanism of the shape-controlled gold dendrite fabrication are analyzed. These shape-controlled gold dendrites present satisfying catalytic performance in selective oxidation of glucose and methanol, which can be promoted to biomedical sensors and methanol fuel cell production.

Biography

Nga Yu Hau is currently a PhD student. She received her BS in Mechanical Engineering from Hong Kong University in 2013. Her current research focuses on nanostructure fabrication and thermoelectric interfacial study.

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