

Short Communication

A study of Growth Mechanism of Fe Nanowires and Nanotube via Template-Based Electrodeposition

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Highly ordered Co nanowire and nanotube arrays were fabricated using anodic aluminum oxide (AAO) templates by DC electrodeposition technique. The Fe microstructures and growth mechanism were investigated using conventional transmission electron microscopy (TEM), Scanning electron microscopy (SEM), X ray diffraction (XRD) method. Two templates with pore size ~50 nm and ~100 nm were prepared, for deposition of nanowires and nanotubes. The material of working electrode and its effect on growth of nanowires and nanotubes was discussed. Our proposed factors i.e. the material of working electrode, pH value, pore diameter and the concentration of metal ions in electrolyte can be useful in future to compose and synthesize other metal nanostructures via template-based electrodeposition.

Keywords: Crystal structure; Nucleation; Growth from solutions; Deposition parameters;

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