



Electrochemical synthesis and characterization of nanorods, nanocolumnar ceria – based thin films on different glass substrates

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<https://doi.org/10.1016/j.cplett.2010.06.002>

Abstract

Nanorods, nanocolumnar-based ceria thin films were electrodeposited onto (FTO) or (ITO) glass substrates, at room temperature. Cubic fluorite type ceria nanostructured films of high crystal quality were synthesized on both substrates, as confirmed by X-ray diffraction and Raman spectroscopy. It was found that a substrate is a structure-directing agent for the growth process of ceria. Columnar-like particles were grown on ITO, and a rod-like ceria on the FTO substrate. It was shown that, by selecting type of the conductive film on glass substrate and cleaning procedure, one-dimensional (1-D) rod-like ceria structures can grow on the FTO-covered substrate, by electrodeposition.