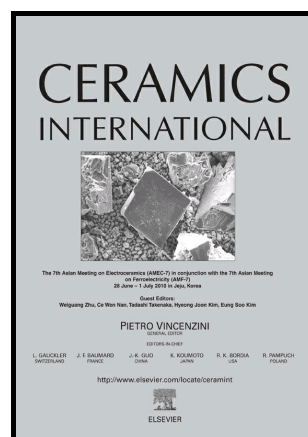


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Abstract

In the present work, the effects of two different morphologies of zinc oxide nanoparticles (nanosheets and nanorods) were investigated by in-situ measurement of deposition weight, and current density. ZnO nanosheets and nanorods were synthesized by microwave-assisted method using co-surfactant route. The average thickness of obtained nanosheets, and the average diameter of nanorods were measured to be about 26 nm and 139 nm, respectively. ZnO films were obtained by electrophoretic deposition via suspension of nanoparticles in ethanol under different voltages. Results indicated that ZnO nanosheets tend to have greater deposition rate than ZnO nanorods under similar conditions. The compactness of the film obtained from nanosheet suspension was higher than the one obtained from nanorod suspension. However, the film obtained from ZnO nanorods displayed more uniformity at different voltages in comparison to the film obtained from ZnO nanosheets, which can be due to different active surface area, and also different way of motion under hydrodynamic forces in the suspension.

Keywords: A. Electrophoretic deposition, B. Nanosheets, B. Nanorods, D. ZnO.

1. Introduction

There is a great deal of interest in applications of zinc oxide due to its unique electrical, optical and mechanical properties, as seen from a surge of relative publications [1]. Widespread use of this semiconductor, especially its nanostructures, is obvious because of its size-dependent properties [2].

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