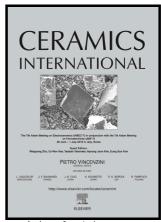
Author's Accepted Manuscript

Synthesis of aqueous nanodispersed nanocrysralline ceria suspensions by a novel organic/inorganic precipitation method

I. Kitsou, E. Roussi, A. Tsetsekou



ww.elsevier.com/locate/ceri

PII: S0272-8842(16)32295-7

http://dx.doi.org/10.1016/j.ceramint.2016.12.047 DOI:

CERI14357 Reference:

To appear in: Ceramics International

Received date: 27 October 2016 Revised date: 5 December 2016 Accepted date: 7 December 2016

Cite this article as: I. Kitsou, E. Roussi and A. Tsetsekou, Synthesis of aqueous nanodispersed nanocrysralline ceria suspensions by a novel organic/inorganic method, Ceramics precipitation International http://dx.doi.org/10.1016/j.ceramint.2016.12.047

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

ACCEPTED MANUSCRIPT

Synthesis of aqueous nanodispersed nanocrysralline ceria suspensions by a novel organic/inorganic precipitation method.

I. Kitsou, E. Roussi, A. Tsetsekou*

School of Mining Engineering & Metallurgy, National Technical University of Athens, 9 Iroon Polytechniou, Zografou Campus, 15780 Athens, Greece

*Corresponding author. Tel: +30 210 7722213, Fax: +30 210 7722119,
athtse@metal.ntua.gr

Abstract

A low cost and environmentally friendly methodology was developed to produce highly stable, nanodispersed, aqueous suspensions of uniform CeO₂ nanocrystals with a mean size at around 5 nm. The synthesis is a hybrid precipitation route that takes place at room temperature from a cerium nitrate solution in the presence of a functional polymer that can act both as complexing and dispersing agent. A hyperbranched poly(ethylene)imine (PEI) or the sodium salt of carboxymethylated poly(ethylene)imine (Trilon P) were investigated for this purpose with very positive results concerning the stability and the dispersion degree of ceria. Between them, the nanoceria suspensions containing the Trilon P are extremely stable and almost monodispersed, whereas PEI based suspensions show loose nanosized agglomerates according to TEM and even DLS measurements.

Keywords: Ceria; nanodispersed suspension; nanocrystallinity; precipitation; hyperbranched poly(ethylene)imine; carboxy-methylated poly(ethylene)imine.

1. Introduction

Download English Version:

https://daneshyari.com/en/article/5438944

Download Persian Version:

https://daneshyari.com/article/5438944

<u>Daneshyari.com</u>