

ON THE ELECTRICAL CONDUCTIVITY  
OF NANOCRYSTALLINE CERIUM OXIDE

SANGTAE KIM AND JOACHIM MAIER

Max-Planck-Institut für  
Festkörperforschung, 70569 Stuttgart,  
Germany

Dense nanocrystalline CeO<sub>2</sub> (~ 30 nm grain size) were prepared by using a low temperature precipitation method followed by pressureless sintering. The partial electronic and ionic conductivities of the sample were measured as functions of oxygen partial pressure and temperature. In order to separately measure the ionic conductivity, galvanostatic measurements were conducted on the sample with electronically blocking electrodes. The conductivity behaviors including the activation energy and the oxygen partial pressure dependence will be discussed focusing on the conductivity effects due to the parallel and series contributions from the space charge layers and interfacial core layers

