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Optical, Structural and Electrochemical Properties of CeO₂–Al₂O₃–SiO₂ Thin Films DURSEN SAYGIN HINCZEWSKI, Istanbul Technical University (I.T.U.), MICHAEL HINCZEWSKI, TUBITAK Bosphorus Univ. Feza Gursey Institute, IDRIS SORAR, ESAT PEHLIVAN, FATMA Z. TEPEHAN, I.T.U., GALIP G. TEPEHAN, Kadir Has Univ. — CeO₂ thin films can be used as counter-electrodes in electrochromic devices, but have the disadvantage of slow reaction kinetics. Thus research has shifted to composite CeO₂ films as more promising ion-storage candidates. In this work, we examine the sol-gel coating and characterization of CeO₂–Al₂O₃–SiO₂ transparent thin films deposited onto glass microslides and indium-tin-oxide-coated conducting glass. We investigate the evolution of the surface morphology, and the optical, structural and electrochemical properties of the films with varying Si-Al-Ce mol ratios. In particular we find the formation of novel complex phase-segregated structures at the surface, which have the potential for enhancing Li ion insertion/extraction.

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