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Synthesis, structural characterization and thermochemical reactivity of tris(ethylenediamine)zinc tetracyanozincate, a precursor for nanoscale ZnO

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Dedicated to Prof. Wolfgang F. Hemminger on the occasion of his 65th birthday.

Abstract

The binuclear complex tris(ethylenediamine)zinc tetracyanozincate was prepared and characterized by single-crystal X-ray structure analysis. It consists of distorted $[Zn(en)_3]^{2+}$ octahedra and $[Zn(CN)_4]^{2-}$ tetrahedra. The thermolysis under air was studied by thermogravimetry, and the resulting product (ZnO) was characterized by X-ray diffraction and scanning electron microscopy, showing compact particles with a diameter of 100–300 nm.

Keywords: Zinc oxide; Coordination compounds; Crystal structure; Thermolysis; Scanning electron microscopy