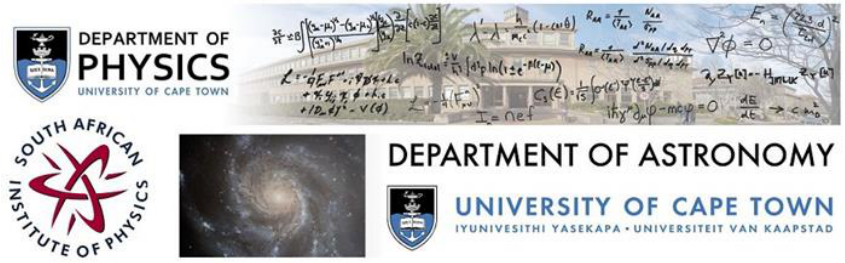

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Simonkolleite nano-platelets: Synthesis and temperature effect on hydrogen gas sensing properties

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Abstract content
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In this work, the new refined mineral platelets-like morphology of simonkolleite based particles described by Shemetzer et al. (1985) were synthesized in zinc- nitrate aqueous solution by a moderate solution process. The morphological and structural properties of the platelets-like Zn5(OH)8Cl2·H2O were char- acterized by scanning electron microscope energy dispersed X-ray spectroscopy, transmission electron microscope, powder X-ray diffraction and selected area electron diffraction as well as attenuated total reflection infrared spectroscopy. The morphology as well as the size in both basal and transversal directions of the simonkolleite Zn5(OH)8Cl2·H2O nano/micro crystals was found to be significantly depending on the specific concentration of 0.1 M of Zn2+/Cl– ions in the precursor solution. The simonkolleite Zn5(OH)8Cl2·H2O nano-platelets revealed a significant and singular H2 gas sensing characteristics. The operating temperature was found to play a key role on the sensing properties of simonkolleite. The effect of temperature on the simonkolleite sample as a hydrogen gas sensor was studied by recording the change in resistivity of the film in presence of the test gas. The results on the sensitivity and response time as per comparison to earlier reported ZnO based sensors are indicated and discussed.

Keywords: Nano-particles Zinc oxide Simonkolleite Hydrothermal
Photonics and gas sensing

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