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Synthesis and characterisation of mechano-chemically synthesised Zinc Oxide nanoparticles using ball milling

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Abstract content
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Zinc oxide (ZnO) nanoparticles were mechano-chemically prepared from the commercial micro-sized ZnO powders using high energy ball milling. The as-purchased ZnO powder was ball milled using steel balls and vials at different time intervals between 1 and 12 hrs. The structural and optical modifications induced in the as synthesized samples were investigated using X-ray diffraction (XRD), scanning electron microscopy (SEM) and photoluminescence (PL). XRD and SEM show a gradual decrease in particle size on increasing the milling time (tm). A new band at around 367 nm is revealed by the PL results and its intensity is found to increase linearly with decreasing particle size. Studies of the effects of indium (In) doping on the structural and optical properties of ball milled ZnO are currently underway.

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Rammutla KE (Erasmus.rammutla@ul.ac.za)

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Primary author: Ms MANAMELA, MF (University of Limpopo)

Co-authors: Prof. RAMMUTLA, Erasmus (University of Limpopo); Dr MOSUANG, Thuto (University of Limpopo)

Presenters: Prof. RAMMUTLA, Erasmus (University of Limpopo); Ms MANAMELA, MF (University of Limpopo)

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