

Abstract Submitted
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Correlation between Morphology and Defect Luminescence in Precipitated ZnO Nanorod Powders MICHAEL CLEVELAND¹, Austin College, Sherman, TX, J. ANTONIO PARAMO, RAUL PETERS, YURI M. STRZHEMECHNY, Texas Christian University, Fort Worth, TX, ZORICA CRNJAK OREL, National Institute of Chemistry, Ljubljana, Slovenia, TEXAS CHRISTIAN UNIVERSITY TEAM², NATIONAL INSTITUTE OF CHEMISTRY, LJUBLJANA, SLOVENIA COLLABORATION — We studied ZnO nanosize rod-shaped structures grown by precipitation. Different growth times were employed. We established a direct correlation between the morphology of the particles and their defect emission. Short growth times (30 min.) yielded irregularly shaped particles with insignificant morphological anisotropy. Such samples revealed relatively weak band gap emission, indicating lower quality of the crystal, and a significant deep defect luminescence centered around 2.2 eV and a relatively shallow defect emission peaking at 3.1 eV. Longer growth times (4 hrs. and 24 hrs.) lead to formation of long nanorods with well-defined hexagonal symmetry. These crystals exhibited reduced defect emission indicating significant improvements in crystal quality.

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