

# Oral Presentations

---

## Synthesis and Investigation of Optical Properties of ZnO Nanorods

**Ishaq Musa**<sup>1,2</sup>, Naser Qamhieh<sup>2</sup>, and Saleh Thaker Mahmoud<sup>2</sup>

<sup>1</sup>*Department of Physics, Palestine Technical University- Kadoorie, Tulkarm, Palestine*

<sup>2</sup>*Department of Physics, UAE University, Al-Ain, P. O. Box 15551 United Arab Emirates*

[ishaqmu73@gmail.com](mailto:ishaqmu73@gmail.com)

### Abstract

One-dimensional nanostructure of length-controlled ZnO nanorods were synthesized by self- assembly process. The ZnO nanorods were assembled from colloidal nanoparticles without surface modification. The as-prepared nanoparticles has spherical shape with size about 3-5 nm, and formed single-crystalline nanorods of length (50-150 nm) and about 16 nm radius. The reaction time parameter plays an important role in the formation process. The morphology and structure of the nanorods were characterized by transmission electron microscopy and X-ray diffraction. Photoluminescence (PL) and UV-visible absorption measurements have been performed at room temperature. The PL results showed that the intensity of ultraviolet (UV) and defect bands depend on the length of ZnO nanorods. The observed intensity variation of ultraviolet and defect band emissions of ZnO nanorods could be used in various colored LEDs and photovoltaic applications.

**Keywords:** ZnO nanorods, UV-Vis spectroscopy, photoluminescence spectroscopy