**Interdisciplinary Insights into Ternary Semiconductor Nanoparticles: Synthesis, Structural Elucidation, and Optical Investigation**

Aswin J Sa, b\*, Racil Jeya Geetha Rb

a Research scholar, Register Number: 23213112131010, Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli – 627 012, Tamil Nadu, India.

b Department of Physics and Research Centre, Nesamony Memorial Christian College, Marthandam-629165, Tamil Nadu, India.

**Abstract**

The co-precipitation technique was used to synthesis CdZnS nanoparticles. XRD and EDAX studies confirmed that the synthesised particles were nanosized. Crystalline size was calculated using XRD. The elemental composition of the produced nanoparticles was verified using the EADX spectrum. SEM analysis enabled the visualization of nanoparticles. The prepared sample was subject to optical investigations. Based on the acquired UV-visible absorption spectra, the Tauc plot was drawn, and the bandgap energy was calculated.

Key words: Co-precipitation, bandgap energy, Tauc plot