

## Study of Size Distribution in Nanostructured Se<sub>58</sub>Ge<sub>39</sub>Pb<sub>3</sub> Glass Using Various Characterization Methods

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**Abstract:** The present paper aims at the study of size distribution of particles in nanostructured Se<sub>58</sub>Ge<sub>39</sub>Pb<sub>3</sub> glass using X-ray diffraction (XRD), Transmission electron microscopy (TEM) and UV–visible spectrophotometer. The thin film sample has been prepared using melt quenching technique and inert gas consolidation method. The particle size distribution obtained from XRD and UV–Vis spectrophotometer shows more uncertainty than the results obtained from TEM measurements. The absorption spectra recorded on UV–Vis spectrophotometer is employed to get band gap values corresponding to different size distribution in sample. Further, it is concluded that TEM is the best measurement technique for size distribution as it has less uncertainty in the obtained results.

**Keywords:** Se–Ge–Pb; Glasses; Nanostructured; Size distribution; Band gap