

**DC AND THERMAL CONDUCTIVITY OF LITHIUM
ZINC PHOSPHATE GLASSES**

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ABSTRACT

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The phosphate glasses, with composition $(60-x)\text{P}_2\text{O}_5-25\text{ZnO}-(15+x)\text{Li}_2\text{O}$ where $0.0 \leq x \leq 5.0$ mol% are prepared by conventional melt quenching method. The amorphous nature of the glass is determined by X-Ray Diffraction (XRD). The DC measurements are done by using four point probes and hence the activation energies are determined. Arrhenius plot shows straight line behavior as observed that confirmed the conductivity increased with Li_2O content. The activation energy is found to decrease from 0.75 eV to 0.08 eV as Li_2O content is increased in the temperature range from 310 K to 420 K. Measurements of the thermal conductivity using Lee's disc apparatus have been made. It is observed that the maximum and minimum thermal conductivity are $0.2679 \text{ Wm}^{-1}\text{K}^{-1}$ and $0.2168 \text{ Wm}^{-1}\text{K}^{-1}$ respectively.

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