**Thermal conductivity of Chalcogenides Alloys for energy and information storage**

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**Abstract**

Chalcogenide alloys continue to receive widespread interest due to their excellent correlated properties essential for thermoelectric and energy storage in non-volatile based memory devices. In this work we present attempts at determination of the thermal conductivity using Surface Brillouin scatter and Time domain thermal reflectance in the various structural phases. Thin films of chalcogenide alloys formed from the Pseudo-binary tie line and eutectic phases have been grown using RF magnetron sputtering on (001) Si substrates. Using the procedure of Cahill’s random walk model on the acoustic phonon velocities we estimate the minimum thermal conductivity of the disorder phase to be k < 0.5 W/mK. Our values are in close agreement with those measured by TDTR in the disordered phase. A low thermal conductivity value is essential for thermal management in Phase change random access memory as well as for thermoelectric applications.

**Keywords:** Thermal conductivity, Acoustic phonons, Cahill’s Model, Chalcogenide alloys, Time Domain Thermal Reflectance.