## Structural and electrical properties of evaporated ZnTe thin films

## Abstract

Zinc telluride thin films of various thicknesses are deposited by vacuum evaporation onto glass substrates at room temperature. The X-ray diffraction technique is used to determine the crystalline structure and grain size of the films, respectively. The structure was found to be cubic with preferential orientation along a (1 1 1) plane and crystallite size of about 50–80 nm. The degree of preferred orientation and crystallite size are increased as the film thickness increases. The current density–voltage (*J*–*V*) characteristics showed ohmic conduction in the lower voltage range and space-charge-limited conductivity in the higher voltage range. Capacitance measurements indicated that the films have a relative permittivity,  $\varepsilon_r$ , of approximately 8.19. Further evidence for this conduction process was provided by linear dependence of  $V_t$  on  $d^2$ . Analysis of the results yielded hole concentration Po=(4.2–8.4)×1023m–3, which is correlated with the structural properties.