**Abstract**

Al‐SnSe‐Al thin film capacitors were fabricated onto well cleaned glass substrates by thermal evaporation under a pressure of 2 mPa. Multiple beam interferometry (MBI) was used to measure the thicknesses of the SnSe films. The composition and structure of Sn*x*Se1‐*x* films were analysed using Rutherford backscattering spectrometry and X‐ray diffractogram, respectively. The capacitor samples were stabilised by aging and annealing. The variations of the dielectric constant and loss as a function of frequency at different temperatures were observed and the results are discussed. AC conduction studies reveal that the conduction mechanism is due to hopping of holes. The activation energies were also calculated.