

A Range of Amorphous Structures

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A range of amorphous structures for a single chemical-composition material (Indium Oxide) were observed; the structure dependent on the growth conditions.

The carrier mobility and film (not carrier) density of the films was dependent on growth temperature.

Films grown at 0°C and below are amorphous

The film density decreased from 7.0 g/cm³ at 0°C to 5.4 g/cm³ at -100°C; the carrier mobility decrease from ~57 cm²/V•s to ~20 cm²/V•s over this same temperature range.

The peak in mobility at 0°C adds to the body of evidence that the best transport properties for amorphous films are achieved at a growth temperature just below that at which crystallinity is observed.

