Observations of thermally induced transformations in amorphous chalcogenide films using transmission electron microscopy

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Abstract:

Thermally induced phase transformations in chalcogenide thin films evaporated from the alloy As 36-Te 53-Ge 11 (wt.%) onto glass substrates kept at room temperature were investigated using transmission electron microscopy. Although the as-deposited films showed an amorphous structure, a sudden and very fast transformation to a crystalline phase took place dendritically on electron-beam heating in the microscope. Annealing of thin films outside the microscope in the temperature range 100–170 °C was also found to cause and assist dendritic recrystallization. This formation of dendrites is discussed in terms of the properties of the material.

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