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Optical band gap and optical constants in amorphous Se_{96-x}Te₄Ag_x thin films
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Abstract

The optical constants (absorption coefficient (α), refractive index (n), extinction coefficient (k), real and imaginary part of dielectric constant) have been studied for a-Se_{96-x}Te₄Ag_x (where $x=0, 4, 8, 12$) thin films as a function of photon energy in the wavelength range (500-1000 nm). It has been found that the optical band gap increases while n and k decreases on incorporation of Ag in Se-Te system. The value of α and k increases, while the value of n decreases with incident photon energy. The results are interpreted in terms of the change in concentration of localized states due to the shift in fermi level. A correlation between the optical band gap and electronegativity of the alloys indicates that the optical band gap increases with the decrease of electronegativity. © 2005 Elsevier Ltd. All rights reserved.

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