

# On the photodissolution kinetics of silver in glassy $\text{As}_2\text{S}_3$

D. Tsiulyanu, I. Stratan

<https://doi.org/10.1016/j.jnoncrysol.2009.10.003>

## Abstract

The kinetics of the photodissolution of Ag into glassy  $\text{As}_2\text{S}_3$  films and its dependence on temperature have been studied by monitoring the changes that occur both in their transmission spectra and transmission of weakly absorbed broadband light. It was shown that besides of a low induction period, the photodissolution kinetics consists of two linear steps with different activation energies, followed by a parabolic tail. The transitions between photodissolution steps was found to be not monotonous and explained in terms of Elliott's model, which asserts a simultaneous ionic and electronic charge transport controlled by chalcogenide properties, illumination and temperature. The evidence is given that the islanding of Ag layer in the course of photoreaction, results in an inversion of maxima and minima of transmission spectra. It is suggested that the islanding of Ag layer is not a consequence of a non-uniform dissolution but arises itself at critical thickness, at which Ag forms a continuous film.