

Thematic course: Hydrochemical synthesis of films of chalcogenide metas. Part 17.

## Estimation of conditions for the formation of $Pb_{1-x}Sn_xSe$ solid solutions by ion-exchange substitution technique using the analysis of effective solubility products of metal selenides

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### Abstract

A calculation technique based on the analysis of the effective solubility products of PbSe and SnSe in aqueous solutions containing different ligands was proposed to estimate the conditions of ion-exchange substitution at the "PbSe<sub>solid</sub> – tin(II) salt aqueous solution" interface. The respective changes in the Gibbs free energy of the ion-exchange reaction were calculated in the reaction systems containing sodium acetate, sodium citrate, sodium chloride, sodium nitrate, sodium tartrate, and trilon B. It was shown that the analysis of the effective solubility products can be useful in determination of the conditions for the formation of  $Pb_{1-x}Sn_xSe$  solid solutions by chemical bath co-deposition of PbSe and SnSe.