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Predicting the temperature for the solid-solid phase transition in ZnS and CdS DOUGLAS BARLOW, Embry Riddle Aeronautical University — At atmospheric pressure, many of the II-VI semiconducting alloys are known to undergo a zinc-blende to wurtzite solid-solid transition at elevated temperatures below the melting point. Few experimental values for these transitions temperatures have been reported. We show here that chemical potentials for one of the components in a solid solution with the other can be used to estimate the transition temperature. The non-ideal behavior of the solvent component is addressed via an activity coefficient which is computed using the quasi-chemical model. The chemical potentials for each case, zinc-blende and wurtzite are then taken to be equal at the transition temperature. Predicted transition temperatures are reported here, and compared with the experimental values for ZnS and CdS.

Douglas Barlow
Embry Riddle Aeronautical University

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