

Au – Sb (Gold – Antimony)

Phase diagram

To redetermine the liquidus on the Au-rich side of the eutectic [95 Hay] have used the DTA. The resulting new shape of the liquidus deviates from the previously accepted line obtained by assessment done by Chevalier et al. [89 Che] as well as from the liquidus resulting from phase diagram calculations [89 Che] as can be seen from Fig. 1.

Thermodynamics

Using the EMF technique Kameda et al. [74 Kam] have determined the thermodynamic activities of liquid Au-Sb alloys. The results are plotted in Fig. 2.

A rather comprehensive investigation of thermodynamic properties of liquid Au-Sb alloys has been performed by Hayer et al. [95 Hay]. Calorimetric determination of integral enthalpies of mixing, ΔH^L , have been done at temperatures between 906 K and 1028 K. Within the limits of error, the authors have found no dependence of ΔH^L on temperature. The results are plotted in Fig. 3.

The enthalpy of formation of the intermediate phase AuSb_2 has been determined by solution calorimetry with pure liquid Sb as the solvent. Its value found amounts to

$$\Delta H^S_{(\text{AuSb})} = -5.4 \pm 0.6 \text{ kJ g-atom}^{-1} \text{ (at 298 K)}.$$

Figures

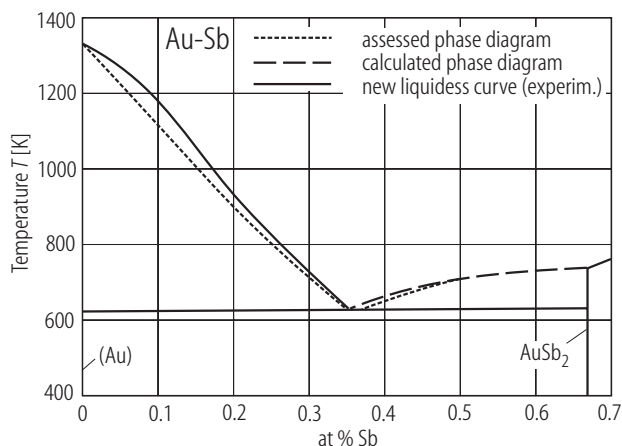


Fig. 1. Au–Sb. Partial phase diagram [95 Hay].

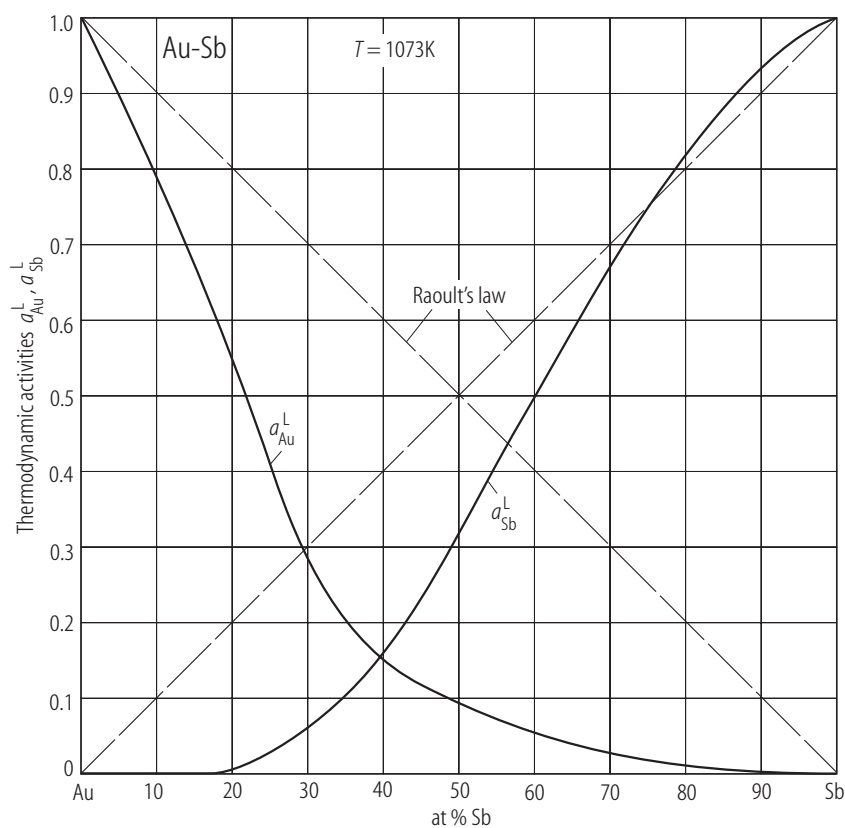


Fig. 2. Au-Sb. Thermodynamic activities of liquid Au-Sb alloys [74 Kam].

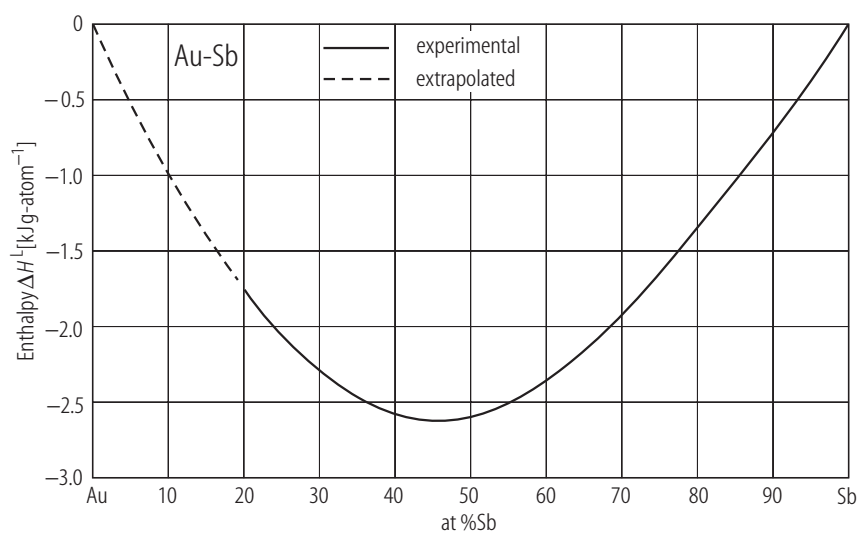


Fig. 3. Au-Sb. Enthalpy of mixing of liquid Au-Sb alloys [95 Hay].

References

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