

Thermochemische Untersuchungen am System Bi/Se/O

III. Zum quasibinären System $\text{Bi}_2\text{O}_3\text{--Bi}_2\text{Se}_3$ und zum ternären Bereich $\text{Bi}_2\text{O}_3\text{--Bi}_2\text{O}_2\text{Se--Se--SeO}_2$

Thermochemical Investigations on the System Bi/Se/O

III. The Quasy Binary System $\text{Bi}_2\text{O}_3\text{--Bi}_2\text{Se}_3$ and the Ternary Range

$\text{Bi}_2\text{O}_3\text{--Bi}_2\text{O}_2\text{Se--Se--SeO}_2$

H. Oppermann^{a,*}, H. Göbel^a, P. Schmidt^a, H. Schadow^{†a}, V. Vassilev^b,

I. Markova-Deneva^b

^a Institut für Anorganische Chemie der Technischen Universität Dresden, Mommenstr. 13, D-01069 Dresden

^b Institut für Halbleiter, Chemisch-Technologische Universität Sofia, B-1756 Sofia

Z. Naturforsch. **54b**, 261–269 (1999); eingegangen am 9. November 1998

Ternary System Bi/Se/O, $\text{Bi}_2\text{O}_2\text{Se}$, Total Pressure Measurements, Enthalpy of Formation, Standard Entropy

Only the ternary phase $\text{Bi}_2\text{O}_2\text{Se}$ is shown to exist in the thermodynamical equilibrium in the investigated ternary system on the binary line $\text{Bi}_2\text{O}_3\text{--Bi}_2\text{Se}_3$. Its thermal decomposition was measured in a quartz membrane zero manometer. The enthalpy of formation and the standard entropy were derived from the temperature function of the decomposition equilibrium:

$$\begin{aligned}\Delta H_f^\circ(\text{Bi}_2\text{O}_2\text{Se}_{s,298}) &= -104,6 \pm 4,0 \text{ kcal/mol} \\ S^\circ(\text{Bi}_2\text{O}_2\text{Se}_{s,298}) &= 43 \pm 3 \text{ cal/K} \cdot \text{mol}.\end{aligned}$$

The coexistence ranges in the ternary region $\text{Bi}_2\text{O}_3\text{--SeO}_2\text{--Bi}_2\text{O}_2\text{Se--Se}$ were followed by X-ray diffraction, IR spectroscopy and total pressure measurements of binary and ternary compositions.

* Sonderdruckanforderungen an Prof. Dr. H. Oppermann. E-mail: Ilona.Steinbrueck@chemie.tu-dresden.de