

## As – S (Arsenic – Sulfur)

### Phase diagram

Blachnik et al. [80 Bla] have redetermined the phase diagram. [Massalski] has redrawn it and from there information has been obtained to construct Fig. 1.

### Crystal structure

Crystallographic data of intermediate compounds are collected in Table 1.

**Table 1. As–S.** Crystal structure data taken from [Pearson].

| Phase                                    | Composition [at% S] | Structure  | Prototype                      | Lattice parameters [nm] |                      |          |
|--|---------------------|------------|--------------------------------|-------------------------|----------------------|----------|
|  |                     |            |                                | <i>a</i>                | <i>b</i>             | <i>c</i> |
| $\gamma$ -As <sub>4</sub> S <sub>3</sub> | 42.9                | tet<br>ort | As <sub>4</sub> S <sub>3</sub> | 1.121                   | 0.990                | 0.658    |
| $\beta$ -As <sub>4</sub> S <sub>3</sub>  | 42.9                |            |                                |                         |                      |          |
| $\alpha$ -As <sub>4</sub> S <sub>3</sub> | 42.9                |            |                                |                         |                      |          |
| stable < 403 K                           |                     |            |                                |                         |                      |          |
| $\beta$ -AsS                             | 50                  | mon        | AsS                            | 0.9957                  | 0.9335               | 0.8889   |
|  |                     |            |                                |                         | $\beta=102.48^\circ$ |          |
| $\alpha$ -AsS                            | 50                  | mon        | AsS                            | 0.7153                  | 0.9994               | 1.2966   |
|  |                     |            |                                |                         | $\beta=120.6^\circ$  |          |
| As <sub>2</sub> S <sub>3</sub>           | 60                  | mon        | As <sub>2</sub> S <sub>3</sub> | 0.4256                  | 0.9577               | 1.2191   |
|  |                     |            |                                |                         | $\beta=109.76^\circ$ |          |
| As <sub>4</sub> S                        | 21.1                | ort        |                                | 0.3576                  | 0.6759               | 1.007    |
| As <sub>4</sub> S <sub>5</sub>           | 55.2                | mon        | As <sub>4</sub> S <sub>5</sub> | 0.798                   | 0.810                | 0.709    |
|  |                     |            |                                |                         | $\beta=100.14^\circ$ |          |

## Figures

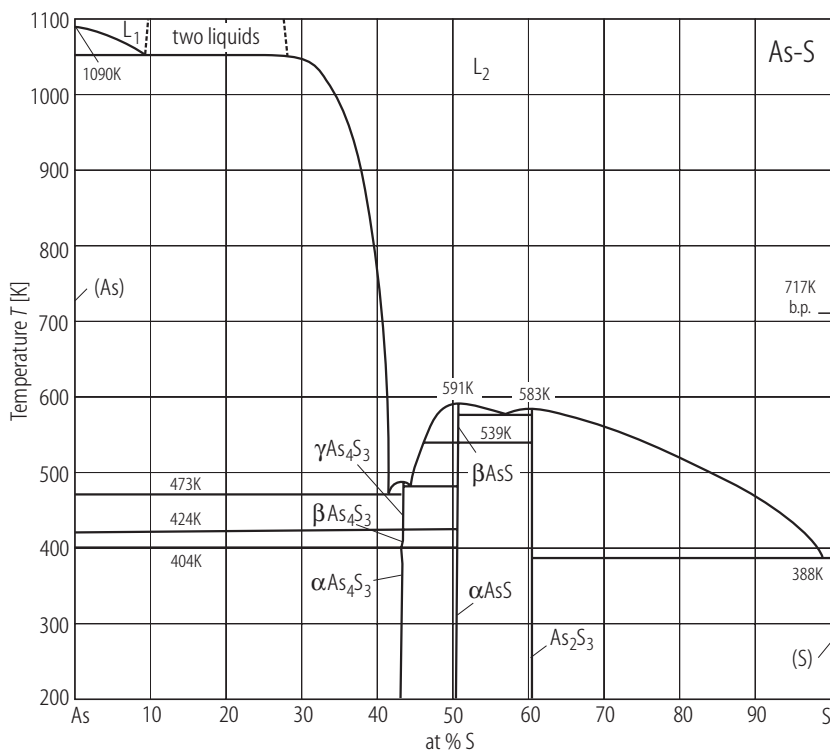


Fig. 1. As-S. Phase diagram [80 Bla].

## References

- [80 Bla] Blachnik, R., Hoppe, A., Wickel, W.: Z. Anorg. Allg. Chem. **463** (1980) 78
- [Massalski] Massalski, T.B., (ed.): "Binary Alloy Phase Diagrams", Second Edition, The Materials Information Society, ASM International, Materials Park, Ohio (1992)
- [Pearson] Pearson, W.B.: "Handbook of Lattice Spacings and Structure of Metals and Alloys", Pergamon Press, New York, (1958), Vol. 1, (1967) Vol. 2