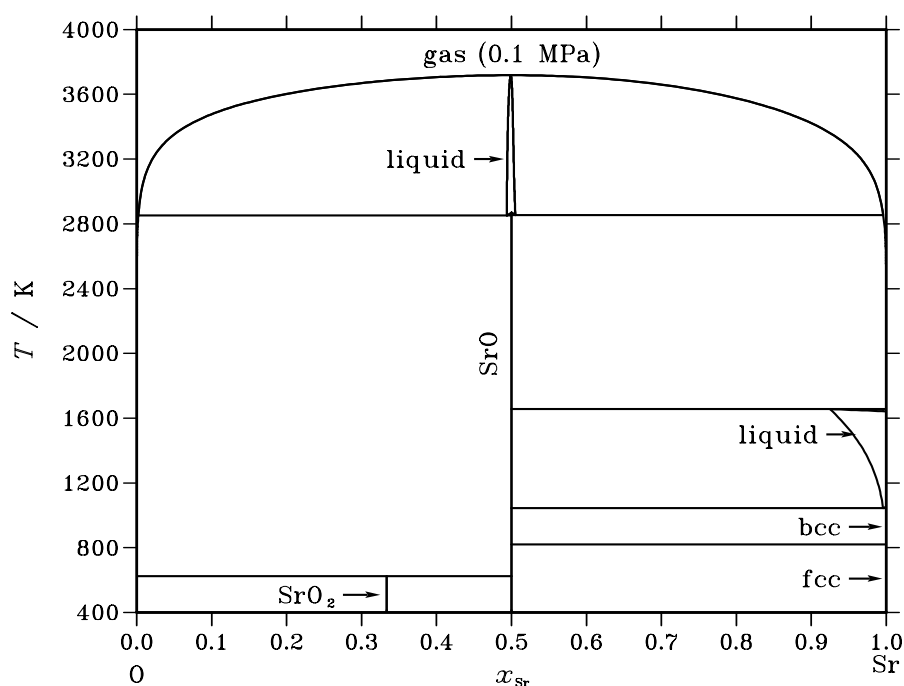


O – Sr (Oxygen – Strontium)**Fig. 1.** Calculated phase diagram for the system O-Sr.

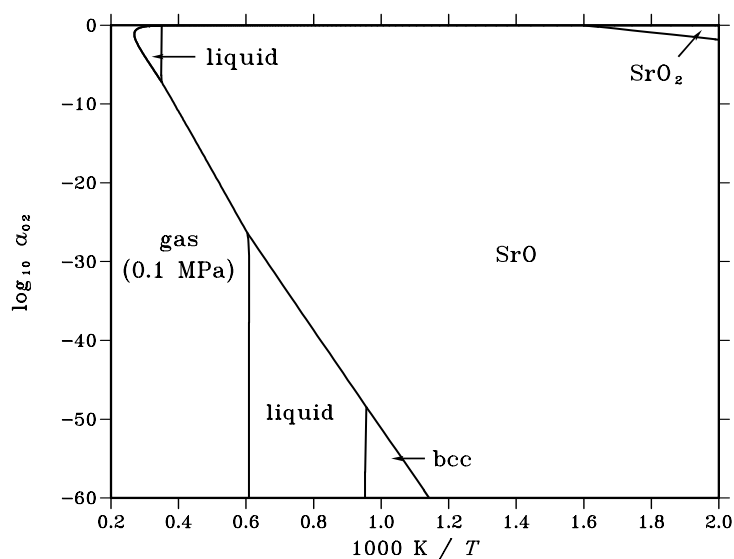
The interest in the Sr-O system is mainly related to the use of Sr in various oxide systems, including high-TC superconducting copper oxides. Based on an evaluation of the literature on Sr-O, Risold *et al.* [96Ris] have worked out a thermodynamic assessment of the system. Their optimisation is based on various data for the monoxide, SrO, including c_P data, enthalpy and EMF measurements, the melting temperature and heat of fusion as well as the standard enthalpy of formation. The data on SrO₂ are much more limited. In the assessment, this information has been combined with data for the pure elements and the gaseous species taken from data compilations. The stability range of molten SrO shown in Fig. 1 is slightly broader than in the diagram of [96Ris] since the model for the ionic liquid used in the combined binary SGTE database includes in addition neutral O-species. However, the resulting differences to the original assessment seem to be within the range of the experimental uncertainties.

Table I. Phases, structures and models.

Phase	Struktur-bericht	Prototype	Pearson symbol	Space group	SGTE name	Model
liquid					IONIC_LIQUID	$\text{Sr}_p^{2+}(\text{O}^{2-}, \text{O}, \square)_q$
SrO ₂	C11 _a	CaC ₂	<i>tI</i> 6	<i>I</i> 4/ <i>mmm</i>	SRO2	Sr ₁ O ₂
SrO	B1	NaCl	<i>cF</i> 8	<i>Fm</i> $\bar{3}$ <i>m</i>	HALITE	Sr ₁ O ₁
bcc	A2	W	<i>cI</i> 2	<i>Im</i> $\bar{3}$ <i>m</i>	BCC_A2	Sr ₁
fcc	A1	Cu	<i>cF</i> 4	<i>Fm</i> $\bar{3}$ <i>m</i>	FCC_A1	Sr ₁

Table II. Invariant reactions.

Reaction	Type	T / K	Compositions / x_{Sr}			$\Delta_r H / (\text{J/mol})$
gas \rightleftharpoons liquid	congruent	3717.8	0.499	0.499		–299889
liquid \rightleftharpoons SrO	congruent	2869.9	0.500	0.500		–44796
liquid \rightleftharpoons SrO + gas	gas-eutectic	2854.9	0.505	0.500	0.996	–43016
liquid \rightleftharpoons gas + SrO	gas-eutectic	2851.5	0.494	0.002	0.500	–43918
SrO + gas \rightleftharpoons liquid	gas-peritectic	1656.6	0.500	1.000	0.925	–108345
liquid \rightleftharpoons SrO + bcc	eutectic	1044.7	0.996	0.500	1.000	–7597
bcc \rightleftharpoons SrO + fcc	degenerate	820.0	1.000	0.500	1.000	–837
gas + SrO \rightleftharpoons SrO ₂	gas-peritectoid	624.9	0.000	0.500	0.333	–14580

**Fig. 2.** Calculated temperature-activity phase diagram. Reference state: $\frac{1}{2}\text{O}_2(\text{gas}, 0.1 \text{ MPa})$.**Table III.** Standard reaction quantities at 298.15 K for the compounds per mole of atoms.

Compound	x_{Sr}	$\Delta_f G^\circ / (\text{J/mol})$	$\Delta_f H^\circ / (\text{J/mol})$	$\Delta_f S^\circ / (\text{J/(mol}\cdot\text{K)})$	$\Delta_f C_P^\circ / (\text{J/(mol}\cdot\text{K)})$
SrO ₂	0.333	–194608	–211961	–58.203	1.213
SrO	0.500	–280477	–296071	–52.304	1.819

References

[96Ris] D. Risold, B. Hallstedt, L.J. Gauckler: Calphad **20** (1996) 353–361.