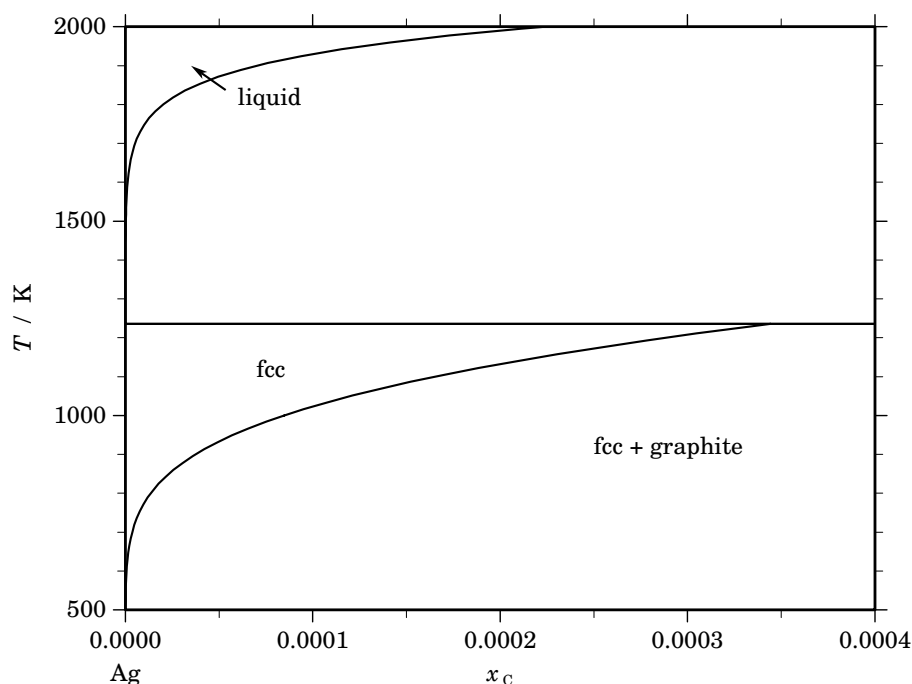


Ag – C (Silver – Carbon)**Fig. 1.** Calculated phase diagram for the system Ag-C.

The Ag-C phase diagram has been studied by various experimental techniques [1919Ruf, 1949Ves, 1959Sne, 1969McL]. The Ag-C system displays the liquid, fcc and graphite phases. This system exhibits immiscibility to a very high degree [1988Kar]. The solubility of Ag in graphite is extremely low, but not known precisely [1988Kar]. The solid solubility of graphite in fcc-Ag has been studied by a vapour transport technique [1969McL] in the range from 1058 to 1230 K. The solubility of carbon in solid silver at its melting point has been found to be 0.036 at.% C. The solubility of carbon in liquid silver is much lower and has been reported in [1919Ruf]. Some compounds of Ag and C have been reported, such as Ag_4C and AgC [1959Sne] and Ag_2C_2 [1949Ves, 1959Sne]. Their existence has not been confirmed by other investigations. The data for the Ag-C system were critically assessed by Korb [2004Kor]. The calculated phase diagram is in good agreement with the data compilation in [1988Kar].

Table I. Phases, structures and models.

Phase	Strukturbericht	Prototype	Pearson symbol	Space group	SGTE name	Model
liquid					LIQUID	$(\text{Ag,C})_1$
fcc	A1	Cu	$cF4$	$Fm\bar{3}m$	FCC_A1	$\text{Ag}_1(\text{C},\square)_1$
graphite	A9	C(graphite)	$hP4$	$P6_3/mmc$	GRAPHITE	C_1

Table II. Invariant reactions.

Reaction	Type	T / K	Compositions / x_{C}			$\Delta_{\text{r}}H / (\text{J/mol})$
liquid + graphite \rightleftharpoons fcc	peritectic	1235.5	0.000	1.000	0.000	-11273

References

- [1919Ruf] O. Ruff, B. Bergdahl: Z. Anorg. Allg. Chem. **106** (1919) 76–94.
[1949Ves] R. Vestin, E. Ralf: Acta Chem. Scand. **3** (1949) 101–124.
[1959Sne] M.C. Sneed, J.L. Maynard, R.C. Brasted: “Comprehensive Inorganic Chemistry”, Vol. II, D, Van Nostrand Co., Inc., New York (1959).
[1969McL] R.B. McLellan: Scr. Metall. **3** (1969) 389–391.
[1988Kar] I. Karakaya, W.T. Thompson: Bull. Alloy Phase Diagrams **9** (1988) 226–227.
[2004Kor] J. Korb: unpublished assessment, GTT-Technologies, 2004.