Aufgabe 6-1: Parameter-composition curve

Metals A and B form a terminal solid solution α of cubic in structure. The variation of the lattice parameter of α with composition, determined by quenching single-phase alloys from an elevated temperature, is found to be linear, the parameter varying from 3.6060Å for pure A to 3.6140Å in α containing 4.0 weight percent B. The solvus curve is to be determined by quenching a two-phase alloy containing 5.0 weight percent B from a series of temperatures and measuring the parameter of the contained α.

How precisely must the parameter be measured if the solvus curve is to be located within ± 0.1 weight percent B at any temperature?

Aufgabe 6-2: Determination of Solvus curve (Parametric method)

The two-phase alloy mentioned in Problem 1 (after being quenched from a series of temperatures) contains α having the following measured parameters:

Temperature (°C)	Parameter (Å)
100	3.6082
200	3.6086
300	3.6091
400	3.6098
500	3.6016
600	3.6118

(a) Plot the solvus curve over this temperature range.

(b) What is the solubility of B in A at 440°C?