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# Computational Analysis of SiC Crystal Growth from Silicon Melt Diluted with Cr, Fe, Co, Ni, Y, Al, La, Ce, Pr, Nd, and Sc. Part 1

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**Abstract.** The effect of various co-solvents on silicon carbide growth from solutions is sequentially analyzed within computational approach. The information related to the problem is collected from available literature and thoroughly treated. Boundary between liquid and solid state of solutions (liquidus line) is found from phase diagrams of 11 binary systems and is accounted for in calculating the carbon solubility at temperature and composition varying in a wide range. Thermophysical and transport properties are collected for preliminary estimation and comparison of growth rates. Their saturation with co-solvent percentage is predicted. Two-dimensional problem is set and first computations are demonstrated. It is shown that addition of lanthanum to the silicon melt gives a significantly higher growth rate than that of chromium.

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