FeNiSi 合金系の相平衡と状態方程式: 内核の珪素量の推定

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Phase relations and static compression of FeNiSi alloy at high pressure: Estimation of the Si content of the inner core

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The pressure-volume equation of state of iron-nickel-silicon alloy Fe-9.8 wt% Ni-4.0 wt% Si and iron-silicon alloy Fe-3.4 wt% Si has been investigated using diamond anvil cell up to 374 GPa and 252 GPa, respectively. These alloys have the hcp structure at all pressure studied. The compression data were fitted to a third order Birch–Murnaghan equation of state. The density of these alloys indicates that the inner core has a composition of Fe-10 wt% Ni-5.4-7.7 wt% Si assuming that the inner core contains the chondritic iron and nickel ratio.

Keywords: high pressure, FeNiSi alloy, phase equilibrium, inner core

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