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A new high-pressure phase of FeSi

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ABSTRACT

A new high-pressure phase of FeSi with the CsCl structure has been synthesized by high-temperature reaction of Fe and Si mixtures at 24 GPa. Powder X-ray diffraction measurements yield a cubic unit cell of $a = 2.7917(1)$ Å for the CsCl-FeSi phase which has composition $\text{Fe}_{0.52}\text{Si}_{0.48}$ by electron microprobe. The transition from ϵ -FeSi to the high-pressure phase occurs at 1950 ± 50 K at 24 GPa and has a negative Clapeyron slope.