

Phase relations in the system $\text{CaMgSi}_2\text{O}_6$ - $\text{CaFeSi}_2\text{O}_6$ under the lower mantle conditions

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Phase relations in the system $\text{CaMgSi}_2\text{O}_6$ - $\text{CaFeSi}_2\text{O}_6$ under the lower mantle conditions (20-40 GPa, 1700-2000 C) have been studied using a laser-heated diamond anvil cell combined with synchrotron X-ray diffraction and analytical electron microscopy. The results show that in $\text{Di}_{100}\text{Hd}_0$ - $\text{Di}_{80}\text{Hd}_{20}$ (Di: $\text{CaMgSi}_2\text{O}_6$, Hd: $\text{CaFeSi}_2\text{O}_6$) $(\text{Mg,Fe})\text{SiO}_3$ perovskite and CaSiO_3 perovskite are stable, while in $\text{Di}_{80}\text{Hd}_{20}$ - $\text{Di}_{55}\text{Hd}_{45}$ both perovskites, magnesiowustite and stishovite are stable, and in $\text{Di}_{55}\text{Hd}_{45}$ - $\text{Di}_0\text{Hd}_{100}$ CaSiO_3 perovskite, magnesiowustite and stishovite are stable.