

## Solubility relations of (Mg,Fe)- and Ca- perovskites under the lower mantle conditions

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To understand the stability and solubility relations of (Mg,Fe)- and Ca- perovskites under the lower mantle conditions, laser-heated diamond anvil cell experiments at 30-80 GPa and 1700-2200 K using CaMgSi<sub>2</sub>O<sub>6</sub> (Di) - CaFeSi<sub>2</sub>O<sub>6</sub> (Hd) pyroxenes as starting materials were performed. The analyses of the synthesized samples by synchrotron X-ray diffraction and analytical electron microscopy, showed that the Ca solubility into (Mg,Fe)- perovskite is 1-2 mole % at 30-80 GPa and slightly decreases with increasing the Fe content, while the (Mg,Fe) solubility into Ca- perovskite is about 4 mole % at 30 GPa in the Di end but significantly increases with increasing the Fe content and pressure.