

Structural change and twinning in CaTiO₃-SrTiO₃ perovskite

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CaTiO₃-SrTiO₃ perovskite was synthesized at temperatures 1100-1300 C, and the quenched samples were examined by X-ray powder diffraction and transmission electron microscopy (TEM). It was suggested from the X-ray diffractions that the boundary between the orthorhombic and the tetragonal phases in (Ca_{1-x}Sr_x)TiO₃ perovskite is at around $x=0.5-0.6$, and the boundary between the tetragonal and the cubic phases is at around $x=0.9-1.0$. TEM observations indicate that {112} and {110} twins were formed mainly by the phase transitions, and from these results combined with the previous X-ray data the phase diagram of this system at high temperature was estimated.