

Behavior of solid-melt interfacial energy under non-equilibrium conditions in a partially molten system

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In diopside-anorthite system, the dihedral angles at solid-solid-melt triple junctions under non-equilibrium conditions were different from the equilibrium values. In cooling (crystallizing) process, the dihedral angles were larger than the equilibrium values at the same temperatures (15 degree increased as maximum), and smaller in heating process. When the dihedral angle exceeded 60 degree in the cooling process, the textural change theoretically predicted was actually occurred. This suggests that the dihedral angle change under non-equilibrium conditions was not an apparent phenomenon but an effective phenomenon caused by the real increase of the solid-melt interfacial energy.