

Experimental study on condensation of forsterite

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Condensation kinetics of forsterite was experimentally studied by using the Knudsen technique. Single crystal of forsterite was kept in a Pt capsule with various sizes of orifice, and heated at 1700C for 12 hours. After the experiments, surface shows a successive change suggestive of highly kinetic condition to near equilibrium condition. The condensation coefficient estimated from the weight loss, under the assumption that the condensation coefficient is intrinsic, changed from 0.1 at near equilibrium condition to larger values at kinetic conditions. The newly obtained condensation coefficient enables us to model the time-dependent condensation process of forsterite in the solar nebula.