

Experiment on Grain Growth of Ice VI

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Understanding of internal activities and structure in giant icy moons of outer solar system depends on knowledge of physical properties on high pressure polymorphs of ice as well as ice I. So the purpose of this study is to obtain the first data set on grain growth kinetics of ice VI. Using diamond anvil cell, experiment was performed on grain growth of ice VI consisted of icy moons and we got the results that the grain growth rate decreases with pressure increasing and is very fast in a geological sense. The latter suggests that diffusion creep controls the deformation mechanism on grain growth and then the dislocation creep does when annealing time is long enough. Thus it is expected that the viscosity of ice VI changes by orders of magnitude with the change of the deformation mechanism.