

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Effect of compression rate on ice VI crystal growth using dDAC¹

YUN-HEE LEE, YONG-JAE KIM, SOOHEYONG LEE, YONG CHAN CHO, GEUN WOO LEE, Korea Research Inst of Standards and Science (KRISS), FRONTIER IN EXTREME PHYSICS TEAM — It is well known that static and dynamic pressure give different results in many aspects. Understanding of crystal growth under such different pressure condition is one of the crucial issues for the formation of materials in the earth and planets. To figure out the crystal growth under the different pressure condition, we should control compression rate from static to dynamic pressurization. Here, we use a dynamic diamond anvil cell (dDAC) technique to study the effect of compression rate of ice VI crystal growth. Using dDAC with high speed camera, we monitored growth of a single crystal ice VI. A rounded ice crystal with rough surface was selected in the phase boundary of water and ice VI and then, its repetitive growth and melting has been carried out by dynamic operation of the pressure cell. The roughened crystal showed interesting growth transition with compression rate from three dimensional to two dimensional growth as well as faceting process. We will discuss possible mechanism of the growth change by compression rate with diffusion mechanism of water.

¹This research was supported by the Converging Research Center Program through the Ministry of Science, ICT and Future Planning, Korea (NRF-2014M1A7A1A01030128)

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Date submitted: 29 Nov 2016

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