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**Ice-silicate fractionation among icy bodies due to the difference of impact strength between ice and ice-silicate mixture** DAISUKE TOMIZUKA, MASAHIKO ARAKAWA, Institute of Low Temperature Science, Hokkaido University — Laboratory experiments on the impact disruption of ice-silicate mixtures were conducted to clarify the accretion process of small icy bodies. Since the icy bodies are composed of ice and silicates with various porosities, we investigated the effect of porosity on the impact disruption of mixtures. We tested the mixture target with the mass ratio of ice to silicate, 0.5 and with 5 different porosities (0, 12.5, 25, 32, 37 %) at the impact velocities of 150 to 670 m/s. The silicate mass ratio was changed from 0 to 0.5 in steps of 0.1 at a porosity of 12.5 % and a constant impact velocity of about 300 m/s. The impact strength of the mixture was found to decrease with increasing porosity and the silicate mass ratio between 0.1 and 0.5 could enhance the strength of the icy target. The observed dependence of the impact strength on the porosity is opposite to that observed for pure ice. This difference could play an important role in ice-silicate fractionation during the accretion process. Because, ice rich bodies are easily broken as the porosity decreases in their evolution, the collisional growth could be prohibited. On the other hand, among the silicate rich bodies the collisional growth could be enhanced.

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