

## **Measurement of porosity-pressure relation of silica micro particles and its application to impact compaction of dust aggregates**

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Planetesimals are believed to be formed by collision and growth of dust aggregates in protoplanetary disk. However, the process has not been fully understood, yet. We focus to study the physical property of dust aggregates. Impact compaction is one of important processes for the densification of protoplanetary dust aggregates. In this study, we compress powder piles in a stainless steel cylinder and investigate the relation between the porosity and the applied pressure using uniaxial compression testing machine as the first step of the study of impact compaction process.

The samples we used are silica microparticles of 0.1, 1 and 10micron in diameter, respectively. The particles were put into a cylinder of 5mm in diameter. The measurements were performed under two different loading rates of 0.1mm/s and 0.001 mm/s. We will discuss on the comparison between the results of different loading rates and particle size, and also on the application of these static measurements to the impact compaction process of dust aggregates.