

## Experimental study of impact compaction process

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Small bodies having substantial porosity have been found. One of the possible origins of the present porosity is the remnant of highly porous structure of dust aggregates and planetesimals.

In this study, we focus on compaction as one of the processes that decrease the porosity. We conducted impact experiments in which we made gypsum spheres colliding with an iron plate at velocities up to 10 m/s. We studied degree of compaction and restitution coefficient at different impact velocities for spheres with three different porosities. The diameter of the spheres was 50 mm.

The degree of compaction was defined as the diameter of the compacted part of the sphere. It was shown that the relation between the degree of compaction and impact velocity was similar for the targets with porosity from 30 to 60 %. The relation between the restitution coefficient and the impact velocity is also insensitive to the porosity of the spheres. On the other hand, it was shown that static crush curve, i.e., porosity-pressure relation changes with porosity of the sample. We will discuss on the difference between the static and dynamic compaction and also on the collisional evolution of internal structure of small bodies.