# Effect of impact on hydrous minerals in planetesimal

*Shigeru Wakita[1]

1. Center for Computational Astrophysics, National Astronomical Observatory of Japan

Planetesimal grow up to planets in early solar system. In that stage, planetesimal collisions would occur. Asteroids would be remnants of planetesimals. Meteorites originate from asteroids and they contains the information of the early solar system. This means that meteorites could be a key to understand the planetesimals.

Hydrous minerals could be found in meteorites, especially carbonaceous chondrites (Davis et al. 2014). Those would be products of aqueous alteration when chondrites are embedded in their parent bodies. Aqueous alteration would be triggered by the decay heat of short radionuclides (Grimm and McSween 1989; Wakita et al. 2011; Gail et al. 2014) or planetesimal impact (Zhang et al. 2016; Tait et al. 2016). Some studies report that evidence of hydrous minerals are found on surface of Ceres (De Sanctis et al. 2016) and Vesta (Palmer et al. 2017).

Hydrous minerals on the surface of the bodies might originate inside of planetesimals. Some mechanisms need to bring them from the inside to the surface of planetesimal. Hydrous minerals in planetesimal could be excavated via impact. However, when they reach some temperature during the impact, they might experience dehydration reaction. Then, they cannot be hydrous minerals anymore.

In this study, we examine the effect of planetesimal impact on hydrous mineral using iSALE shock physics code (Amsden et al, 1980; Collins et al., 2004; Wünnemann et al., 2006). We will discuss whether hydrous minerals could escape from the dehydration reaction during the planetesimal impact or not.

 