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Dynamic dehydration processes of porous antigorite by impact TOSHIMORI SEKINE, TOMOAKI KIMURA, Hiroshima University, TUTOMU MASHIMO, Kumamoto University, TAKAMICHI KOBAYASHI, National Institute for Materials Science — Antigorite Hugoniot indicates that it is stable up to a pressure of ∼50 GPa. When antigorite is under a circumstance surrounding pores in natural meteorite, the stability may change with local temperature rising effects. Since antigorite acts a potential carrier of water in the solar system, the dynamic dehydration process is a key to understand the ability of carrier. We carried out shock recovery experiments in a pressure range between 5 GPa and 60 GPa. The recovered samples were investigated using XRD, TEM, and TG-DTA. In order to recover samples, it was found that the amount of sample was critical. There seems to be two steps of dehydration processes; limited dehydration below 20 GPa and violent dehydrations above 20 GPa. The violent reaction depends on the porosity of a sample. The TG-DTA results couples with XRD indicate that dehydration products are forsrerite and enstatite without their high-pressure forms and hydrous minerals. The amount of amorous phase was only a trace based on the TEM observations, implying that dehydration reaction may have occurred at high temperatures for the crystals to grow during pressure release.

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