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Asteroidal collision inferred from meteorites: A preliminary results on the systematic survey for NIPR collection

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Collision is one of the most important processes for the evolution of asteroid. Meteorites, mostly originated from asteroids, show the evidence for asteroidal collision, such as breccia, shock-induced vein, and the occurrence of exotic clast. These features were already documented for many meteorites [e.g., 1, 2]. However, the relative abundance of meteorites subjected to collisional process has been rarely reported, in spite of its significance. Systematic study is necessary to explore the collisional process based on a large collection. One of the best collection is a great number of Antarctic meteorites in NIPR. We have started such study on this collection, and here present the preliminary results.

According to the published data for chondrites in NIPR collection, 86 show distinct breccia texture. 145 chondrites include some kinds of clast, such as shock-darkened, granular, igneous and foreign clasts. 75 chondrites contain shock vein and melted area. An ultrahigh pressure mineral, ringwoodite, is often encountered in such vein under optical microscope. As noticed by Lin and Kimura [3], melt rock and breccia are common in these enstatite chondrite collection. Thus, brecciation and other shock features induced by asteroidal collision are commonly observed in NIPR collection.

References: [1] Keil K. (1994) *Planet. Space Sci.*, 42, 1109-1122, [2] Bridges J.C. and Hutchison R. (1997) *MAPS*, 32, 389-394. [3] Lin Y. and Kimura M. (1998) *MAPS*, 33, 501-511.

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