

Development of a simplified 3D shape measurement system for micro spherical object: application to chondrules

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We developed a simplified system to measure the 3D shape of micro spherical object such as chondrules. This system consists of macro photography lens, consumer digital camera, and automatic mechanical stages and has a capacity to shoot pictures at up to 0.85 um/pixel. The camera and stages are automatically controlled by PC. Photographic images of a sample were obtained every 2 degrees up to 180 degrees in backlight to enhance the contrast between sample and environment for ease of binarization in image processing. The images were binarized and extracted coordinates of the outline of the sample in every degree to construct the 3D shape of the sample by our own software. The 3D shape can be exported as STL file, which is very common file format for 3DCAD and CG software.

In this study, we report the measuring results of 3D shape of chondrules separated from Allende CV3 chondrite (Tsuda et al, JPGU 2013).

Keywords: 3D shape, chondrule, Allende CV3 chondrite, spherical micro object