Experimental investigation for the process of astro organic globules

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Organic globules were found in the Tagish Lake meteorite (carbonaceous chondrite fallen in 2000) and their similarity to bio-membranes was suggested based on their IR spectra (Nakmura et al., 2002). On the other hand, film-like products were reported to be formed during the hydrothermal heating of an OH-bearing amino acid (threonine:Thr) solution (Nakashima and Shiota, 2001). In order to simulate formation processes of the organic globules, hydrothermal heating experiments of Thr solutions have been conducted with a porous rock.

By heating 40ml of Thr solution with a piece of porous rock (about 1cm in diameter) in the hydrothermal vessel (about 50ml of volumes) at 160C for 4 days, organic globules of 2 to 20micro meter in size were observed under Scanning Electron Microscope (SEM) on the rock surface. Therefore, organic globules can be formed during aqueous alternation of carbonaceous chondrites.