**THERMOGRAPHIC STUDIES ON CHONDRULES – IMPLICATIONS FOR PHOTOPHORESIS**

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Several studies on meteoritical and cometary material gave evidence for radial material transport through the Solar Nebula [1,2]. Different transport mechanisms have been proposed by several authors, like e.g. the X-Wind model [3] or diffusive transport [4]. Photophoresis has been introduced by [5] as an important transport mechanism for chondrules and was further discussed by [6]. Photophoresis is based on the interaction of the surface of a particle (e.g. a chondrule) and the surrounding gas. Due to illumination (visible or infrared) a temperature gradient is induced along the particle's surface and the interaction with the gas molecules leads to a force directed from the warm to the cold side. First measurements of photophoresis on chondrules have been performed by [7]. They showed that photophoresis can accelerate chondrules in principle, but photophoresis depends on the detailed particle properties, like particle shape, as well as the thermal conductivity of the chondrules and the emissivity of the particle surface.

To correlate the photophoretic motion of chondrules with the material properties, an experimental technique has been developed to study the thermal conductivity and the emissivity of chondrules using a high resolution thermography camera. The particles are attached to a 15 µm copper wire and placed in a vacuum chamber to avoid disturbing influence due to convection and cooling. The chondrules are observed by a thermography camera with a maximum resolution of 25 µm/Pixel and are illuminated by a 40 mW Laser ($\lambda$ = 645 nm) at an angle of 90° with respect to the infrared camera. The light of the laser is absorbed at the surface of the chondrule and the heated parts of the chondrule emit infrared light according to their surface temperature and their emissivity. The evolving temperature profile along the surface can be resolved spatially and chronologically by the infrared camera. The temperature distribution on the chondrule surface depends on the mineralogical composition of the chondrule and enters directly into the strength of photophoresis.

In this work we will present first results of a high resolution thermography study on chondrules. The chondrules are gained from the meteorite Bjurböle and cleaned from any matrix material using a SiC suspension. The results of the thermography analysis will be correlated with experiments on photophoretic motion scheduled for December 2010.

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