



## **Ultrasonic trap for light scattering measurement**

Petr Barton and Jiri Pavlu

Faculty of Mathematics and Physics, Charles University, Prague, Czech Republic

Light scattering is complex phenomenon occurring widely in space environments, including the dense dusty clouds, nebulas or even the upper atmosphere of the Earth. However, when the size of the dust (or of other scattering center) is close to the incident light wavelength, theoretical determination is difficult. In such case, Mie theory is to be used but there is a lack of the material constants for most space-related materials.

For experimental measurement of light scattering, we designed unique apparatus, based on ultrasonic trap. Using acoustic levitation we are able to capture the dust grain in midair, irradiate it with laser, and observe scattering directly with goniometer-mounted photodiode. Advantage of this approach is ability to measure directly in the air (thus, no need for the carrier medium) and possibility to study non-spherical particles. Since the trap development is nearly finished and initial experiments are carried out, the paper presents first tests on water droplets.