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Experimental Setup for Studying Chondrule Formation in Micro-Gravity at the ISS.

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The EXCISS experiment deals with the formation of chondrules under micro gravity conditions [1]. The experiment will be performed inside a NanoRacks NanoLab, an aluminium box with a size of 10 x 10 x 15 cm. It is connected via USB and the ISS provides up to 900 mA at 5 V.

This environment poses many challenges to the technical implementation of the experiment. The sample chamber is made of glass with embedded tungston electrodes. A DC-DC converter is charging a capacitor to a programable voltage (150–500V). The stored energy is released into an arc discharge which is triggered by a high voltage peak introduced by an ignition coil. Further, we built a modified microscope optic with a lenght of less than 15 cm to observe the particles (80 to a few 100 µm in diameter). The data collection is done by a Raspberry Pi 2 with an uninteruptable powersupply.

[1] Koch et al. (2017) Paneth Kolloquium, Nördlingen (Germany) 29

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