

MICROGRAVITY SCIENCES AND PROCESSES SYMPOSIUM (A2)  
Fluid and Materials Sciences (2)

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PARABOLIC FLIGHT MEASUREMENTS OF NANOFLUID THERMAL CONDUCTIVITY BY A  
TRANSIENT OPTICAL TECHNIQUE**Abstract**

The thermal diffusivity of nanofluids sample were investigated under micro-gravity conditions and hyper-gravity conditions during parabolic flights. A transient optical technique was implemented to measure the diffusivity in several nanofluid samples. An experimental set up was designed, calibrated and participated to the the 54th ESA parabolic flight campaign in the frame of the 'Fly Your Thesis 2010' program. During the campaign, 93 runs of the experiments were performed, investigating the thermal conductivity of 16 nanofluids. The investigated liquids include 10 samples of carbon nanotubes, with particles concentrations ranging from 0,02 to 2 percents (particles weight fractions) and 6 samples of alumine oxyde nanofluid, ranging from 0,05 to 0,2 percents. The runs of the experiment were performed at different steps of the parabolas (0-g and 2g phases) to evaluate the influence of variable gravity on the quality of the results. The present report provides descriptions of the experimental technique, of the QNEM experimental set up and of the data processing and analysis. The results are discussed and compared with data obtained with several measurement techniques under gravity conditions.