Contribution ID: **70** Type: **not specified**

Cross-correlating Major Luminescence Pressure Standards for Diamond Anvil Cell Experiments at Low Temperatures

The diamond anvil cell is a well-established high-pressure technique that enables studies of small material samples at pressures exceeding multiple megabars. It is widely used for investigating strongly correlated systems, particularly at moderate pressures below 50 GPa and low temperatures.
While luminescence standards for pressure determination are well understood under ambient and high-temperature conditions, low-temperature studies rely primarily on Cr^{3+}-doped Al_2O_3, which has limitations and conflicting calibration curves. This project will cross-correlate four luminescence-based pressure standards—Sm:YAG, $SrBrO_4$, Cr:Al_2O_3, and the novel AlB_4O_6N. The resulting insights will improve reproducibility and comparability in high-pressure, low-temperature experiments, but in particular in the fields of solid state physics.

Group

FS-PETRA-D

Project Category

A4. Development of experimental techniques

Special Qualifications

DESY Site

Hamburg

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