LA-ICP-MS ANALYSIS OF PROJECTILE MATERIAL FOR EXPERIMENTAL CRATERING (MEMIN PROJECT). A. Deutsch[1], J. Berndt[2], T. Kenkmann[3] and I. Domke[1] [1]Institut f. Planetologie, Wilhelm-Klemm-Str. 10, Universität Münster, D-48149 Muenster, Germany; [2]Institut für Mineralogie, Univ. Münster, D-48149 Muenster, Germany;. [3]Museum für Naturkunde – Leibniz Institut an der Humboldt-Universität Berlin, D-10115 Berlin, Germany. E-mail. <deutsca@uni-muenster.de>.

Within the frame of the MEMIN (Multidisciplinary Experimental and Modeling Impact Research Network [1]) program, 1.0 x 1.0 x 0.5-m-sized blocks of quartz sandstone have been impacted by steel spheres with a mass of 4.1 g; impact velocity was 5.3 km s^{-1} [2]. One of the goals of the project is to document, analyze, and understand the fate of the projectile and it's dissemination into ejected material and the target. In order to reach this goal, a careful characterization of the chemical composition of the projectile is needed, as well as sophisticated techniques to collect the ejecta separated in time (early – late) and space (high vs. low angle) (e.g., [3]). The results of such an experimental study can than be compared with data from natural impact craters [4], and will provide input data for more accurate scaling. The pilot experiments yielded some unexpected results as parts of the projectile were ejected as spall fragments while evidence for melting and even vaporization was found in the target and the ejecta during the SEM post-mortem study [2]. Such high-T features are in contrast to the calculated peak shock pressure of <60 GPa, and point to local pressure excursions. High T processes may also include element fractionation; therefore the use of an iron meteorite for making the projectiles would be desirable. Documentation of the dissemination of projectile matter and of impact-induced fractionation effects is only possible using equipment with very low detection limits (e.g., for PGE, Ga, Ge and others) and extreme spatial resolution [5]. In a first attempt to select an iron meteorite appropriate as projectile, a slice of the IC iron meteorite Arispe [6], and mm^2–sized pieces of the material used for the preparation of the projectiles in the MEMIN pilot experiments (AISI 4130 STEEL DIN 1.7218 25CrMo4) were prepared for laser ablation ICP mass spectrometry (Thermo Element2; Inst. f. Mineralogie Münster). The following masses were analyzed, ^{52}Cr, ^{53}Cr, 59Co, ^{60}Ni, ^{63}Cu, ^{69}Ga, ^{72}Ge, ^{75}As, ^{95}Mo, ^{121}Sb, ^{182}W, ^{191}Ir, ^{193}Ir, ^{194}Pt, ^{195}Pt, and ^{197}Au. We have used two isotopes for both, Ir and Pt in order to test accuracy and precision of our experimental setup. The Pt/Ir ratio in Arispe as measured with the LA-ICP-MS is 0.9572 ± 0.068 (mean +- 1 σ; N = 5), ^{194}Pt/^{195}Pt is 1.001 ± 0.022 compared to the recommended value of 0.9855 ± 0.0029, and ^{191}Ir/^{193}Ir is 1.004 ± 0.017.

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