Supplementary material for article

"Laser Beam Profile Influence on LIBS Analytical Capabilities"

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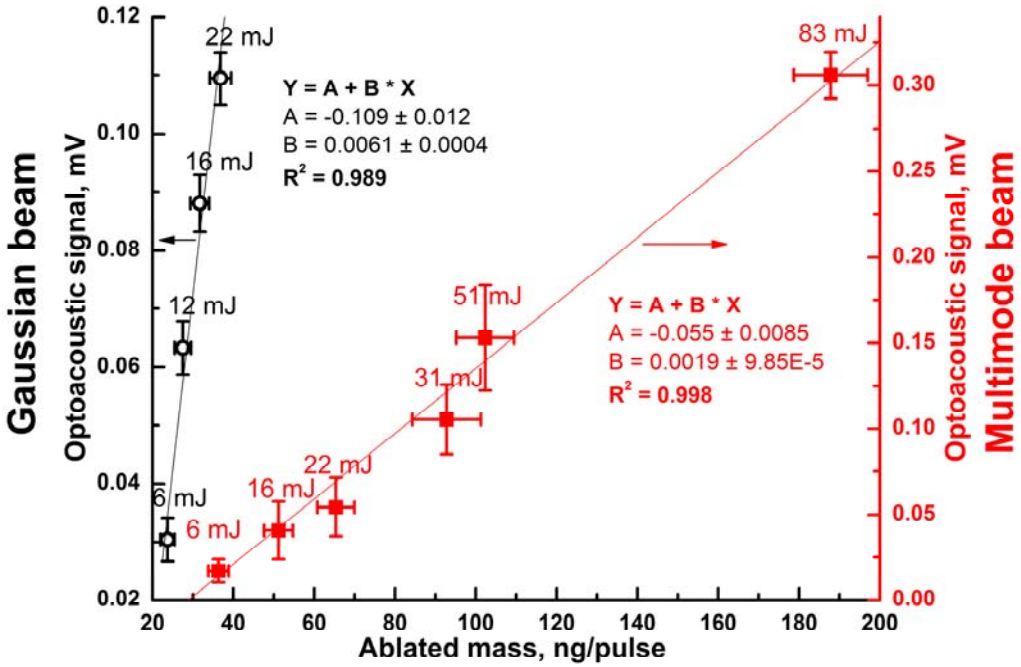

Fig. S1 Optoacoustic signal as a function of ablated mass.

For both beams (Gaussian and multimode) optoacoustic signal was deteced for different pulse energy. Optoacoustic signal error was determined as standard deviation (SD) from 50 measurements with 100 pulses were used as a cleaning pulses before detection.

For multimode beam energy were decreased with neutral optical filters. For Gaussian beam an optical amplifier were used and energy was varied by changing voltage on amplifier flashlamp.

Ablated mass was determined by follow procedure: a piece of sample (sample 1) was polished to a foil with 95 ± 5 μm thickness. After that for both beams this foil was ablated until hole formation and number of pulses needed for making this hole was determined (a photodiode was placed at back side of foil and when hole was formed a photodiode signal was observed). Every hole was studied with optical microscope from both surfaces of foil. Form of hole was fitted with truncated cone and ablated volume was determined. Since density of material is known than evaporated mass of hole was devided by the number of pulses needed to form this hole and ablation rate or ablation mass per pulse was estimated.