****Table-top ultrafast laser forging of warm dense matter: novel phenomena and applications**** [[1]](#footnote-1)\*)

DOI: 10.34854/ICPAF.2022.49.1.005

Kudryashov S.I.

Lebedev Physical Institute of RAS, [kudryashovsi@lebedev.ru](mailto:kudryashovsi@lebedev.ru)

Multi-scale dynamic effects accompanying table-top interaction of sub-relativistic ultrashort laser pulses with material surfaces in femtosecond laser ablation (FLA) regime are overviewed as consequent steps of 1) thermionic electron emission, charging surface to initiate its plasma emission as double electric layer, 2) ultrafast electron/energy transport and energy transfer into a lattice, generationof superstrong, Mbar-level shock waves and supercritical fluid expulsion [1]. FLA applications in shock-wave surface peening of materials and fabrication of functional nano-and microstructured coatings are discussed.

References

1. Ionin A.A., Kudryashov S.I., Samokhin A.A. "Material surface ablation produced by ultrashort laser pulses" Phys. Usp. **60** (2), 149-160 (2017).

1. \*) [abstracts of this report in Russian](http://www.fpl.gpi.ru/Zvenigorod/XLIX/R/ru/JI-Kudryashov.docx) [↑](#footnote-ref-1)