

Target characteristics used in laser-plasma acceleration of protons based on the TNSA mechanism

A. Măgureanu^{1,2}, C.M. Ticoș^{1,2}

¹ *Extreme Light Infrastructure-Nuclear Physics (ELI-NP), Horia Hulubei National Institute for Physics and Nuclear Engineering (IFINHH), Măgurele, Romania,*

² *Engineering and Applications of Lasers and Accelerators Doctoral School (SDIALA), University Politehnica of Bucharest, Bucharest, Romania*

The target normal sheath acceleration is a robust mechanism for proton and ion acceleration from solid targets when irradiated by a high power laser. Since its discovery extensive studies have been carried out to enhance the acceleration process either by optimizing the laser pulse delivered onto the target or by utilizing targets with particular features. Targets with different morphologies such as the geometrical shape (thin foil, cone, spherical, foam-like, etc.), with different structures (multi-layer, nano- or microstructured with periodic striations, rods, pillars, holes, etc.) and made of different materials (metals, plastics, etc.) have been proposed and utilized. Here we review some recent experiments and characterize from the target point of view the generation of protons with the highest energy [1].

REFERENCES

1. Măgureanu A, Dincă L, Jalbă C, Andrei RF, Burducea I, Ghiță DG, Nastasa V, Gugiu M, Asavei T, Budrigă O, Ticoș D, Crăciun V, Diaconescu B and Ticoș CM (2022) Target Characteristics Used in Laser- Plasma Acceleration of Protons Based on the TNSA Mechanism. *Front. Phys.* 10:727718. doi: 10.3389/fphy.2022.727718