

Abstract Submitted  
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**Enhanced Ion Acceleration from Micro-tube Structured Targets<sup>1</sup>**

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— We present an enhanced ion acceleration method that leverages recent advancements in 3D printing for target fabrication. Using the three-dimensional Particle-in-Cell simulation code Virtual Laser-Plasma Lab (VLPL), we model the interaction of a short pulse, high intensity laser with a micro-tube plasma (MTP) structured target. When compared to flat foils, the MTP target enhances the maximum proton energy by a factor of about 4. The ion enhancement is attributed to two main factors: high energy electrons extracted from the tube structure enhancing the accelerating field and light intensification within the MTP target increasing the laser intensity at the location of the foil. We also present results on ion energy scaling with micro-tube diameter and incident laser pulse intensity.

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