Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

PIC simulations of cone surface roughness and angle dependence in high intensity laser/micro-cone interaction NATHALIE LE GALLOUDEC, EMMANUEL D'HUMIERES, University of Nevada, Reno, Reno NV 89557, BYOUNG ICK CHO, JENS OSTERHOLZ, TODD DITMIRE, University of Texas, Austin, Austin TX 78712, YASUHIKO SENTOKU, University of Nevada, Reno, Reno NV 89557 — It has been recently demonstrated that compared to a typical flat target, micro-cone targets can increase laser energy absorption and energetic electrons temperature when irradiated by a high intensity laser. These increases are very promising for numerous applications of high intensity laser plasma interaction, like proton acceleration or isochoric heating. Using Particle-in-Cell simulations, we have analyzed the role of cone surface roughness and cone angle in changing the characteristics of the produced energetic electrons population. Our results are compared to experiments done at UT Austin with the Thor laser (0.5 J, 40 fs, 800 nm, 7 microns focal spot). Based on these results, we propose new micro-cone designs to increase the efficiency of laser energy deposition.

Emmanuel d'Humieres
University of Nevada, Reno, Reno NV 89557

Date submitted: 20 Jul 2007 Electronic form version 1.4