

Abstract Submitted
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Strongly Polarized Plasma Emission Produced by Laser Ablation of Aluminum ROBERT GORDON, YAOMING LIU, JOHN PENCZAK, YOUBO ZHAO, University of Illinois at Chicago — We have found that continuum emission produced in the laser ablation of a material may be strongly polarized, whereas as discrete atomic or ionic emission lines appear as minima in the plasma polarization spectrum [1]. This effect is indicative of strong directionality of electrons recombining in the plasma. By placing a polarizer before the detector, it is possible to suppress the continuum background, thereby greatly increasing the resolution and detection sensitivity. Previously this technique used double pulses of femtosecond Ti:Sapphire radiation to achieve maximum polarization [2]. Here we show that single pulses on both the fs and ns time scales produce strongly polarized spectra of Al. The effects of laser intensity, focal position, angle of incidence, and polarization state of the laser are explored.

[1] Y. Liu, S. Singha, T. E. Witt, and R. J. Gordon, *Appl. Phys. Lett.* 93, 161502 (2008).

[2] Y. Zhao, S. Singha, Y. Liu, and R. J. Gordon, *Opt. Lett.* 34 (in press).

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