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Measurement of Laser Plasma Instability (LPI) Driven Light Scattering from Plasmas Produced by Nike KrF Laser[1] JAECHUL OH, Research Support Instruments, J.L. WEAVER, L. PHILLIPS, S.P. OBENSCHAIN, A.J. SCHMITT, D.M. KEHNE, V. SERLIN, Naval Research Laboratory, R.H. LEHMBERG, E.A. MCLEAN, C.K. MANKA, Research Support Instruments — With short wavelength (248 nm), large bandwidth (1$\sim$3 THz), and ISI beam smoothing, Nike KrF laser provides unique research opportunities and potential for direct-drive inertial confinement fusion. Previous Nike experiments observed two plasmon decay (TPD) driven signals from CH plasmas at the laser intensities above $\sim 2 \times 10^{15}$ W/cm^2 with total laser energies up to 1 kJ of $\sim$350 ps FWHM pulses. We have performed a further experiment with longer laser pulses (0.5$\sim$4.0 ns FWHM) and will present combined results of the experiments focusing on light emission data in spectral ranges relevant to the Raman (SRS) and TPD instabilities. Time- or space-resolved spectral features of TPD were detected at different viewing angles and the absolute intensity calibrated spectra of thermal background were used to obtain blackbody temperatures in the plasma corona. The wave vector distribution in k-space of the participating TPD plasmons will be also discussed. These results show promise for the proposed direct-drive designs.

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