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Characterization of Focused Ultrashort Pulses as a Function of Wavelength[1] JOSHUA BECK, COLLIN MCACY, University of Nebraska-Lincoln, SKYLER MARSH, Southeast Missouri State University, RYAN KARNEMAAT, Rose-Hulman Institute of Technology, TIM SCARBOROUGH, California Institute of Technology, CORNELIS UITERWAAL, University of Nebraska-Lincoln — In previous experiments, we have studied the photoionization and photofragmentation of substituted benzenes using intense fields from an 800 nm, femtosecond laser source and an experimental method that eliminates the focal volume effect without the need for data deconvolution [Phys. Rev. Lett. 100, 023002 (2008)]. Using this approach, we have found that in many substituted benzenes REMPI dominates the ionization process at around 800 nm [Phys. Chem. Chem. Phys., 2011, 13, 13783-13790]. We have now started to expand our studies using an optical parametric amplifier (Spectra-Physics TOPAS-C) which is tunable between 475 nm and 2800 nm. For reliable wavelength-dependent experiments, proper characterization of the position of the focus, including focal pulse duration and pulse intensity for the various wavelengths, is of crucial importance. We present preliminary characterization of post-OPA foci imaged at the interaction volume using reflective optics. Initial results will employ a spherical mirror, though the final experiment will require an off-axis parabolic mirror. Diagnosis of the focus will allow us to align this mirror and record its focal intensity distribution in real time, making accurate wavelength-dependent photoionization experiments feasible.

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