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Broadband mid-infrared measurements for shock induced chemistry SHAWN MCGRANE, PAMELA BOWLAN, KATHRYN BROWN, CYNTHIA BOLME, MARC CAWKWELL, Los Alamos National Laboratory — Vibrational absorption spectroscopy across the mid-infrared range is a ubiquitous diagnostic of chemical effects due to its sensitivity to small variations in bonding. At the high temperatures and pressures relevant to shock induced chemistry, vibrational spectral peaks become very broad, and accessing as much spectral range as possible with high time resolution can significantly aid in deducing chemical dynamics. Here, we report experiments using broadband ($<$500 cm^{-1} to $>$2000 cm^{-1}) mid-infrared femtosecond supercontinua created by four wave mixing in filaments to perform absorption spectroscopy. These broadband mid-infrared supercontinua are detected through upconversion to visible light. Initial efforts to utilize these methods for measurement of chemical dynamics in shocked nitromethane will be reported.

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