

Abstract Submitted  
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**Laser-Cluster interaction in Mid-IR range<sup>1</sup>** HYUNWOOK PARK, ZHOU WANG, PIERRE AGOSTINI, LOUIS DIMAURO, The Ohio State University — We report an experimental study on high harmonic generation (HHG) from inert gas clusters in direct comparison with atomic gases. In the experiment, noble gas clusters, which are produced by a supersonic pulsed jet, interact with infrared lasers at moderate intensity and generate high-order harmonics. Harmonic yields are recorded as a function of cluster size in an optical spectrometer, and group delay measurements are conducted with RABBITT method. In the HHG amplitude measurements, we observed a fast increase of the yield with the size of the clusters, and slowdown when clusters are larger than a critical size. In the HHG phase measurements, we observed almost identical group delay of harmonics from the cluster comparing with the monomer, which supports three step model in harmonic generation from noble gas clusters. A 1D Lewenstein's model in a cluster is constructed with an assumption of partially delocalized electron behavior.

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