

Abstract Submitted  
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**Time-resolved Laser Coulomb Explosion Imaging of N<sub>2</sub>, O<sub>2</sub> and CO molecular dynamics** IRINA BOCHAROVA, IGOR LITVINIYUK, LEWIS COCKE, SANKAR DE, RAY DIPANWITA, MAGRAKVELIDZE MAIA, PREDRAG RANITOVIC, Kansas State University — We studied dissociation dynamics of nitrogen, oxygen and carbon monoxide molecules following their interaction with intense few-cycle laser pulse. Time-resolved Laser Coulomb Explosion Imaging (TLCEI), a pump-probe technique, was employed to measure kinetic energy release of correlated explosion fragment as a function of time delay for symmetric and asymmetric break-up channels. Kinetic energy release intensity map reflects the time behavior of parts of a nuclear wave packet oscillating in potential wells and moving along unbound potential curves of many molecular ion states. Assuming experimental conditions (intensity, pulse duration) and tunneling ionization mechanism we were able to build simple classical and quantum models uncovering details of dissociation process for N<sub>2</sub>, O<sub>2</sub>, CO molecules which fit perfectly our experimental results.

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