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High resolution transmission electron microscopy of lattice dynamics of graphene JIAN-HAO CHEN, NASIM ALEM, Department of Physics, University of California at Berkeley and Materials Sciences Division, Lawrence Berkeley National Laboratory, ABHAY GAUTAM, MARTIN LINCK, CHRISTIAN KISIELOWSKI, Nation Center for Electron Microscopy, Lawrence Berkeley National Laboratory, ALEX ZETTL, Department of Physics, University of California at Berkeley and Materials Sciences Division, Lawrence Berkeley National Laboratory — Lattice dynamics of carbon atoms in graphene was investigated by aberration corrected ultra-high resolution transmission electron microscopy near the holes and the grain boundaries. We studied in-situ formation of various unusual defect structures in graphene under various conditions. In this presentation we will show the stability and dynamics of the atoms at the holes, grain boundaries and the defects and discuss their formation mechanism. This work will also elaborate on the electronic properties of the defects in light of recent experimental and theoretical progress.

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