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**Nano-plasmonic phenomena in graphene**

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Infrared nano-spectroscopy and nano-imaging experiments have uncovered a rich variety of optical effects associated with the Dirac plasmons of graphene [Fei et al. Nano Lett. 11, 4701 (2011)]. We were able to directly image Dirac plasmons propagating over sub-micron distances [Fei et al. Nature 487, 82 (2012)]. We have succeeded in altering both the amplitude and wavelength of these plasmons by gate voltage in common graphene/SiO2/Si back-gated structures. Scanning plasmon interferometry has allowed us to visualize grain boundaries in CVD graphene. These latter experiments revealed that the grain boundaries tend to form electronic barriers that impede both electrical transport and plasmon propagation. Our results attest to the feasibility of using these electronic barriers to realize tunable plasmon reflectors: a precondition for implementation of various metamaterials concepts [Fei et al. Nature Nano 8, 821 (2013)]. Finally, we have carried out pump-probe experiments interrogating ultra-fast dynamics of plasmons in exfoliated graphene with the nano-scale spatial resolution [Wagner et al. (under review)].