



DLS

Distinguished Lecturer Series

26 November 2020 15.00 CET



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Mischa Bonn Max Planck Institute for Polymer Research

Graphene Terahertz Photonics



Graphene is an attractive candidate for many optoelectronic applications because of its vanishing bandgap and high carrier mobility. Ultrashort terahertz (THz) pulses interact strongly with charge carriers in graphene. On the one hand, this strong interaction allows to probe the conductivity within one layer of graphene on ultrafast timescales. On the other hand, the strong interaction can be used for the efficient heating of charge carriers, when strong THz fields are applied. This process, in turn, can be used to generate higher harmonics of THz radiation, with unprecedented efficiency: 1% of the terahertz field can be converted into its third harmonic with a single pass through the 3.3 Å thin graphene monolayer. Higher (fifth, seventh, ninth, ...) harmonics can also be readily generated.