Photoluminescence in highly doped graphene

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Pristine graphene is a zero-bandgap semiconductor. Usually no photoluminescence can be observed from such zero-bandgap material upon laser excitation. In highly doped graphene, however, we observed a strong broadband photoluminescence. We will discuss the mechanism of this photoluminescence in graphene, which arises from new recombination pathways enabled by strong electrical doping. We will also describe the polarization dependence of this newly observed photoluminescence.