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Graphene nanophotonics: From fundamentals to applications

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With unique possibilities for controlling light in nanoscale devices, graphene has opened new perspectives to the nanophotonics community with potential applications in metamaterials, modulators, photodetectors, and sensors. Following a brief introduction of graphene, I will present recent our results on graphene, such as excitation of graphene plasmon polaritons [1], pushing graphene plasmons to short wavelengths, and investigating of graphene plasmon-phonon interactions [2]. Finally I will discuss graphene-based optical modulators [3], particularly focusing on graphene-silicon platforms for electro-absorption modulating.

Fig. 1. Graphene based electro-optical modulator

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