

## Plasmons in Epitaxial Graphene on SiC

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Plasmons in graphene differ from plasmons in noble metals by the spectral response, degree of electromagnetic wave confinement, decay pathways, and their unique tunability. After introducing graphene plasmons, basic theory, and their possible applications, I will discuss how the optical experiments provide a tool to study the intricate details of graphene plasmons. I will discuss the origin of plasmon resonance in as-grown graphene, the role of plasmon-plasmon interaction, and the role of the buffer layer. I will discuss the role of the quantum capacitance of the buffer-related states as one of the contributions to the plasmon redshift. The second part of my talk will deal with the time-resolved plasmons in as-grown graphene and hydrogen-intercalated graphene nanoribbons. The terahertz scanning near-field optical microscopy will also be discussed to identify additional sources of electromagnetic wave confinement.