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Graphene applications for nano-photonics

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Graphene is an atom-thick material that shows distinct electrical and mechanical properties, thanks to its hexagonal lattice of carbon atoms. For instance, graphene-based platforms offer a basis for compact and tunable photonic devices. This is because graphene waveguides offer nanoscale optical confinement, tunable graphene conductivity in the optical range, desirable properties of being able to stand alone and good compatibility with a wide diversity of optical and electronic materials. In this presentation, we present our recentwork on exploiting graphene layers to achieve , and giant amplification, of photonic signals in theterahertz frequency range, owing to the distinct grapheme properties.

Biography

M Qasymeh received a Ph.D. degree in electrical engineering from DalhousieUniversity, Canada, in2010. He was the recipient of a Mitacs Elevate Postdoctoral Fellowship at the Microwave Photonics Research Laboratory in the School of Electrical Engineering and Computer Science at the University ofOttawa, Canada. In 2011, he joined the Electrical and Computer Engineering Department at Abu Dhabi University, the United Arab Emirates, where he is currently an Associate Professor of Electrical Engineering. His current research interests include plasmonic devices and structures, and terahertz photonics. He is also active in research on nonlinear optics, electro-optic devices, and recently quantum photonics.

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