

Abstract Submitted
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**Biomimetic graphene sensors:
functionalizing graphene with peptides**¹ MASA ISHIGAMI, Department of Physics and Nanoscience Technology Center, University of Central Florida, Orlando, FL, SANG NYON KIM, RAJESH NAIK, Materials and Manufacturing Directorate, Air Force Research Laboratory, Writer-Patterson Air Force Base, OH 45433, SUREN A. TATULIAN, Department of Physics, University of Central Florida, Orlando, FL, 32816-2385, JYOTI KATOCH, Department of Physics and Nanoscience Technology Center, University of Central Florida, Orlando, FL — Non-covalent biomimetic functionalization of graphene using peptides is one of more promising methods for producing novel sensors with high sensitivity and selectivity. Here we combine atomic force microscopy, Raman spectroscopy, and attenuated total reflection Fourier transform infrared spectroscopy to investigate peptide binding to graphene and graphite. We choose to study a dodecamer peptide identified with phage display to possess affinities for graphite and we find that the peptide forms a complex mesh-like structure upon adsorption on graphene. Moreover, optical spectroscopy reveals that the peptide binds non-covalently to graphene and possesses an optical signature of an α -helical conformation on graphene.

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