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Local Property Change of Graphene Induced by a Cu Nanoparticle LI-WEI HUANG, Institute of Physics, Academia Sinica, Taipei 11529, Taiwan, HORNG-TAY JENG, Department of Physics, National Tsing Hua University, Hsinchu 30013, Taiwan, CHIA-SENG CHANG, Institute of Physics, Academia Sinica, Taipei 11529, Taiwan — Investigating the detailed impact from an individual nanoparticle on graphene membrane is a great challenge. We employed ultra-high vacuum electron microscopy and first-principles calculations to reveal the changes on the graphene's morphology and electronic structures upon adsorption of a Cu nanoparticle. Our findings show that the significant amount of charge transfer from the individual Cu nanoparticle to graphene causes local electronic redistributions at the interface and a consequent recess of the graphene with prominent tilt angles.

Li-Wei Huang
Institute of Physics, Academia Sinica, Taipei 11529, Taiwan

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