Abstract Submitted
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Electronic transport properties of graphene with 5 *d* metal adatoms[1] YILIN WANG, SHUDONG XIAO, WENZHONG BAO, JANICE REUTT-ROBEY, University of Maryland, College Park, MICHAEL FUHRER, University of Maryland, College Park/School of Physics, Monash University, Australia — Electronic transport properties of graphene are highly sensitive to adsorbates on its surface. Adsorbates can affect graphene through doping and scattering, and 5*d* metal adsorbates have been predicted to induce strong spin-orbit coupling and open a bandgap [1]. Here we study the *in-situ* transport properties of single-layer graphene doped with 5*d* heavy metal atoms. Iridium was deposited on graphene at a substrate temperature of 7 K under ultra-high vacuum condition. Gate-dependent conductivity measurements show that the mobility and minimum conductivity of graphene decrease with increasing Iridium concentration. The results are in agreement with the self-consistent theory of graphene with random charged impurities [2], and do not indicate any significant bandgap in graphene with Iridium adatoms. We will also discuss temperature-dependent measurements, and co-adsorption of Iridium and krypton.

[1] Phys. Rev. Lett. **109**, 266801 (2012)
[2] *PNAS* **104**, 18392 (2007)

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