

Electronic Supplementary Information

Influence of dopants on the impermeability of graphene

S. S. K. Mallineni^{a,b}, D. W. Boukhvalov^{c,d}, I. S. Zhidkov^e, A. I. Kukharenko^e, A. I. Slesarev^e, A. F. Zatsepin^e, S. O. Cholakh^e, A. M. Rao^{a,b}, S. M. Serkiz^{a,g}, S. Bhattacharya^{a,b}, E. Z. Kurmaev^{e,f}, and R. Podila^{a,b} *

a.Department of Physics and Astronomy, Clemson University, Clemson, South Carolina, 29634, USA

b.Clemson Nanomaterials Center, and COMSET, Clemson University, Clemson, South Carolina, 29625, USA

c.Department of Chemistry, Hanyang University, 17 Haengdang-dong, Seongdong-gu, Seoul 133-791, Korea

d.Theoretical Physics and Applied Mathematics Department, Ural Federal University, Mira Street 19, 620002 Yekaterinburg, Russia

e.Institute of Physics and Technology, Ural Federal University, 620002 Yekaterinburg, Russia

f.M.N. Mikheev Institute of Metal Physics, Russian Academy of Sciences, Ural Branch, 620990 Yekaterinburg, Russia

g.Savannah River National Laboratory, Aiken, SC 29808, USA

* Corresponding authors: rpodila@g.clemson.edu, Phone: 864-656-4447

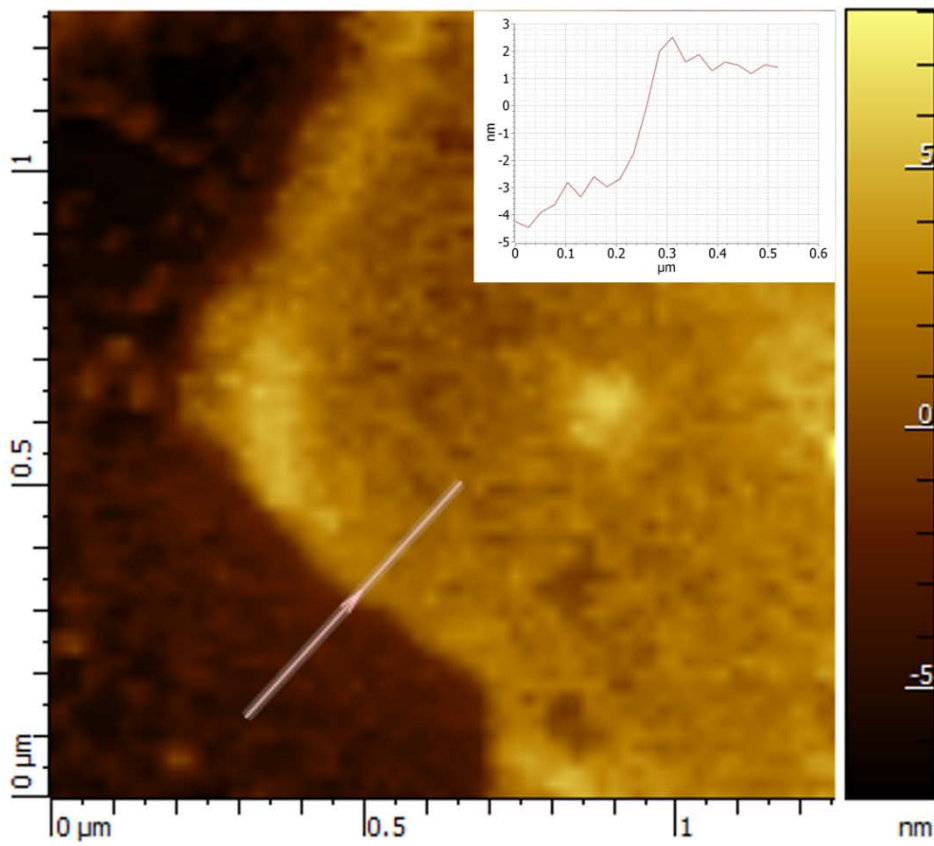


Figure S1: The AFM image of CVD grown graphene shows that our FLG is ~5 nm thick, which is ~7-10 layers thick.

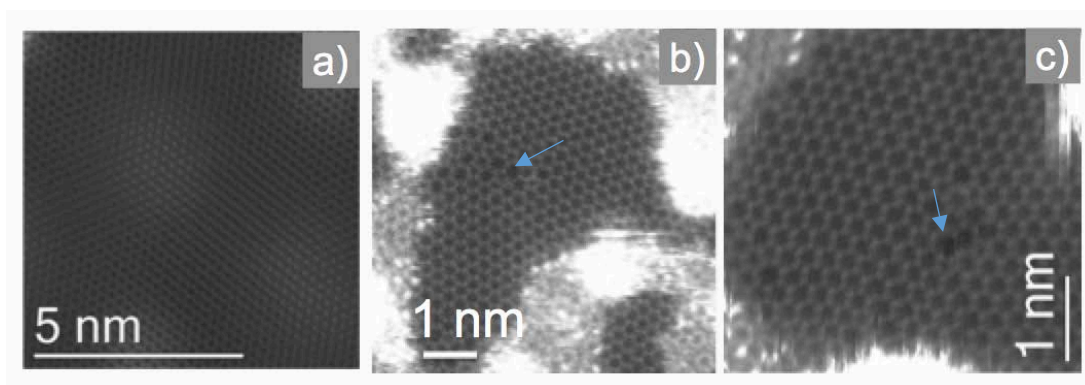


Figure S2: The TEM images of pristine (a) and doped graphene (b and c). The presence of dopants results in defects such as vacancies and non-hexagonal structural defects.