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Incremental Tuning of Graphene's Fermi Level by Chemical Doping KARA BERKE, University of Florida, SEFAATTIN TONGAY, University of California, Berkeley, ARTHUR HEBARD, University of Florida — We report a simple, scalable method for fine tuning the Fermi level of CVD-grown graphene, through controlled chemical doping by the addition of the polymer polyethyleneimine (PEI) to the graphene surface. Graphene samples initially showed p-type behavior before doping. By dropcasting a low concentration solution of PEI in methanol onto graphene, the hole concentration was lowered. Repeated applications to the same sample shift the Fermi level of the graphene through the Dirac point, yielding an increasingly n-type sample. The graphene mobility increases with each application of PEI solution due to charge screening effects. Additionally, the magnetoresistance becomes increasingly linear near the Dirac point, consistent with the existence of charge puddles in neutral graphene.

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