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Magnetic nanostructures on graphene XIAOJIE LIU, Center for Quantum Science and School of Physics, Northeast Normal University, Changchun, 130117, People's Republic of China., CAI-ZHUANG WANG, Ames Laboratory U. S. Department of Energy, and Department of Physics and Astronomy, Iowa State University, Ames, IA, 50011, U. S. A., HAI-QING LIN, Beijing Computational Science Research Center, Beijing 100084, China, MYRON HUPALO, Ames Laboratory U. S. Department of Energy, and Department of Physics and Astronomy, Iowa State University, Ames, IA, 50011, U. S. A., PATRICIA A. THIEL, Ames Laboratory U. S. Department of Energy, Department of Chemistry and Department of Materials Science and Engineering, Iowa State University, Ames, KAI-MING HO, MICHAEL C. TRINGIDES, Ames Laboratory U. S. Department of Energy, and Department of Physics and Astronomy, Iowa State University, Ames, IA, 50011, U. S. A. — The calculations also show that Fe clusters on graphene exhibit ferromagnetic order but have smaller magnetic moments compared to the corresponding free-standing clusters. By contrast, Mn clusters on graphene exhibit ferrimagnetic coupling and enhanced magnetic moment compared to their free-standing clusters. Adsorption of Fe and Mn nanostructures also induces magnetic moments in graphene, and the induced magnetic moment on each carbon atom in graphene is correlated with the distortion of the graphene lattice. The origin of the magnetic moment changes in the clusters upon adsorption can be attributed to the electron redistribution due to the interaction with graphene.

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