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Chemically Controllable Ferromagnetic Graphene for High-Performance Spintronic Devices JEONGMIN HONG, UC Berkeley — The spin and charge of the electron when taken together, offer many opportunities for the creation of new information processing and storage devices applications with ultralow power consumption. Chemically controllable growth of large area nanocarbon structures has attracted considerable interests due to their superior properties. If large area nanocarbon could have by-design magnetic properties, multifunctional electronic devices could be built through modulation controlled by external factors such as 1) functionalization onto basal plane of carbon, 2) substrates effects (proximity induced ferromagnetism), and 3) external electric field. We performed soft X-ray measurement techniques using X-ray magnetic circular dichroism (XMCD) and revealed the controllable ferromagnetic properties on graphene structures. The chemically controllable nanomagnet would be an excellent building block for the applications of graphene-based high-performance spintronic devices.

Jeongmin Hong
UC Berkeley

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