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**Directed Assembly of Iron Phthalocyanine and Pentacene Molecules on a Graphene Monolayer Grown on Ru(0001)** SHIXUAN DU, Institute of Physics, CAS, PR China, H.G. ZHANG, J.T. SUN, L.Z. ZHANG, Q. LIU, J.H. MAO, Y. PAN, M. GAO, H.T. ZOU, H.M. GUO, W.A. HOFER, H.-J. GAO, INSTITUTE OF PHYSICS, CHINESE ACADEMY OF SCIENCES, PR CHINA TEAM, SURFACE SCIENCE RESEARCH CENTRE, UNIVERSITY OF LIVERPOOL, UK COLLABORATION — Monolayer graphene was successfully fabricated on *4d* transition metal surfaces. The resulting ordered Moiré pattern was found to be an ideal template for the formation of ordered nanoclusters and molecules. Using scanning tunneling microscopy we show the selective adsorption process and assembly of iron phthalocyanine and pentacene molecules with different structural symmetries on a graphene monolayer, epitaxially grown on Ru(0001). The combination of first principles calculations and experimental measurements suggests that the lateral dipole field is the main driving mechanism for assembling molecules into ordered arrays. These findings should be important for achieving a large scale well-defined molecule-graphene interface. And such a detailed understanding of the molecular assembly will be essential in the actual fabrication process.

Shixuan Du  
Institute of Physics, CAS

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