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**Generation of Electricity at Graphene Interface Governed by Underlying Surface Dipole Induced Ion Adsorption** SHANSHAN YANG, YUDAN SU, QIONG WU, YUANBO ZHANG, CHUANSHAN TIAN, Fudan University — Aqueous droplet moving along graphene surface can produce electricity. This interesting phenomenon provided environment-friendly means to harvest energy from graphene interface in contact with sea wave or rain droplets. However, microscopically, the nature of charge adsorption at the graphene interface is still unclear. Here, utilizing sum-frequency spectroscopy in combination with measurement of electrical power generation, the origin of charge adsorption on graphene was investigated. It was found that the direct ion-graphene interaction is negligibly small, contrary to the early speculation, but the ordered surface dipole from the supporting substrate, such as PET, is responsible for ion adsorption at the interface. Graphene serves as a conductive layer with mild screening of Coulomb interaction when an aqueous droplet slips over the surface. These results pave the way for optimization of energy harvesting efficiency of graphene-based devices.

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