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Unusual frictional signals in exfoliated mono layer graphene JIN SIK CHOI, IK SU BYUN, JIN-SOO KIM, SANG HO JEON, IN ROK HWANG, SA HWAN HONG, SEUNG-WOONG LEE, SUNG-OONG KANG, BAE HO PARK, Division of Quantum Phases & Devices, Department of Physics, Konkuk Univ., DUHEE YOON, HYERIM MOON, HYEONSIK CHEONG, Department of Physics, Sogang University, Seoul 121-742, Korea, YOUNG-WOO SON, Korea Institute for Advanced Study, Seoul 130-722, Korea — We have investigated abnormal friction phenomena on graphene mono-layer using atomic force microscopy (AFM). The graphene sample was prepared by exfoliation method on thermal oxidized 3000Å-thick SiO2 buffer layer using 3M scotch tape. In order to analyze the friction phenomena, we have changed sample loading direction, scan direction, contact force, and scan speed. Moreover, influence of H2O was checked. Through the experiments, we confirmed that these phenomena are related with graphene itself, not from the SiO2 buffer layer. These friction phenomena may provide information for defect structures or for detecting artifacts of mono layer graphene surface.

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