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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 SiO<sub>2</sub> 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 H<sub>2</sub>O was checked. Through the experiments, we confirmed that these phenomena are related with graphene itself, not from the SiO<sub>2</sub> buffer layer. These friction phenomena may provide information for defect structures or for detecting artifacts of mono layer graphene surface.

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