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Molecular dynamics simulation of graphene friction: the interplay of tip, graphene and substrate MINWOONG JOE, CHANGGU LEE, Sungkyunkwan Univ — Graphene is a promising future platform material that could be harnessed in wealth of new applications by virtue of its superior electronic and mechanical properties. Also, atomically thin graphene provides an ideal testbed for investigating fundamental aspects of nanoscale friction. Here, molecular dynamics simulations are performed to study frictional behaviors of atomic force microscope tip on graphene. The effects of tip crystallinity, scan direction (or graphene orientation), and graphene thickness are examined. Puckering hypothesis is revisited by comparison with rigid/supported/suspended graphene cases. Our studies provide broader perspectives into the friction mechanism on graphene.

Minwoong Joe
Sungkyunkwan Univ

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