

Abstract Submitted
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Sliding friction levels of water films on graphene measured by means of QCM ZIJIAN LIU, SAMUEL KENNY, ZACHARY FREDRICKS, JACQUELINE KRIM, North Carolina State University — Diffusion and sliding friction of water on graphene is a matter of great current interest [1]. To study the surface friction of water on graphene, we recorded water film adsorption on a graphene film coated quartz crystal microbalance (QCM). Graphene films were deposited on QCMs via evaporation in vacuum on nickel substrates. Measurements were performed with the QCM mounted in vacuum, and then water vapor was slowly introduced into the vacuum chamber until it reached saturation, while simultaneously monitoring the frequency and amplitude of the QCM. Negative shifts in frequency were observed, indicating that water vapor formed a film on the graphene film. The amplitude data was used to calculate the mechanical resistance and slip time for water molecules sliding on the graphene surface. The low slip time indicates a relatively low friction between a water film and graphene. Funding provided by NSF DMR.

[1] R. R. Nair et al. Science 335, 442 (2012)

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