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Nanotribological studies of Temperature Rise in a Sliding Adsorbed Film MATTHEW WALKER, North Carolina State University, CHERNO JAY, North Carolina State University, JACQUELINE KRIM, North Carolina State University — Theoretical predictions of friction-induced temperature increases at sliding interfaces in general show a wide variation, with little opportunity for experimental verification. In order to explore temperature rise in a particularly simple geometry, we have recorded isotherms of sliding Kr layers adsorbed on graphene (a one-atom thick layer of graphite) and compared them to those recorded in the past in static conditions[J.A. Venables, *Introduction to surface and Thin Film Processes.* Cambridge University Press, Cambridge, (2000) p. 116]. We synthesize graphene on a Ni(111), which has a lattice spacing stretched approximately 2% beyond that of graphite. The Ni(111) was prepared as an electrode on the surface of a quartz crystal microbalance (QCM) so that friction measurements in sliding conditions could be recorded [J. Krim and A. Widom, Phys. Rev. B, **38**, 12184 (1988)]. Superposition of the isotherms recorded for this system were superimposed on the static volumetric phase diagrams to infer a temperature increase of approximately 15K above the temperature at which the experiments were performed. Work funded by the NSF.

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