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Investigation of Aqueous Lubricants on Polymer Surfaces by Nanoindenter-based Scratch Tests WENDY E. KRAUSE, JING LIANG, JUNLONG SONG, ORLANDO J. ROJAS, NCSU — Nanoindenter-based scratch (nanoscratch) tests were successfully used to study lubrication at the microscale in the presence of a fluid film. The influence of aqueous lubricants on both hydrophobic (polypropylene and polyethylene) and hydrophilic (cellulose) surfaces was investigated. The lubricants consisted of aqueous solutions of amphiphilic block copolymers of ethylene oxide (EO) and propylene oxide (PO). The coefficients of friction were measured in the presence of lubricant solution on the solid surfaces. An improved lubricity (*i.e.*, coefficient of friction decreased) was observed to occur as the adsorption excess increased.

Wendy Krause
North Carolina State University

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