



# Understanding Electromechanical Properties of Few Layer Two-Dimensional Materials



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2-Dimensional transition metal dichalcogenides combine semi-conducting and piezoelectric properties in atomic layer sheets, where an induced lattice strain results in ion-charge polarization. In a collaboration between NU groups in MRSEC IRG 1, we investigate the electromechanical properties of monolayer MoS<sub>2</sub> flakes using friction force microscopy in the presence of an applied electric field. We observed electric field induced local modulation of the frictional force between a scanning probe-tip and a monolayer MoS<sub>2</sub> flake. The nanoscale friction studies have implications on understanding phononic and electronic contributions to energy dissipation in two dimensional materials.

