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Capillary Force Driven Nanoactuator GAURAV SINGH, RAVI SARAF, University of Nebraska - Lincoln — By stimulating an aqueous drop trapped between a substrate and ∼30 nm thick polymer film with AC electric field, we have designed an actuator with a frequency response up to (at least) 100 KHz. The amplitude of vibration of the polymer film is sensitive to the surface chemistry of the substrate (such as polymer brush, etc.) and ion concentration. The device shows only first order response and the amplitude is proportional to the magnitude of the AC field. We will present our recent results on the frequency response as a function of ion content and dynamics of ionic polymer brush such as, tethered DNA. The data will be explained in terms of electro-wetting phenomena.

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