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Characterization of polar molecular species adsorbed on $LiNbO_3$ surfaces[1] SATYAVEDA BHARATH[2], THOMAS PEARL[3], North Carolina State University — In order to explore the mechanisms of adsorption on ferroelectric surfaces, single crystalline lithium niobate ($LiNbO_3$: LN), 'Z-cut' along the (0001) plane, has been prepared and characterized and subsequently exposed to a polar molecule. 4-*n*-octyl-4*′*-cyanobiphenyl (8CB) liquid crystal was chosen as our model system. Low-energy electron diffraction, atomic force microscopy, surface contact angle measurement, and X-ray photoelectron spectroscopy were used to characterize the surface of LN as well as the nature of the films grown on the surface. Atomically flat LN surfaces were prepared as a support for monolayer thick, 8CB molecular domains. Preferential attachment for positive domains was observed indicating an interaction between the polar end group of the molecule and the surface charge of the surface. Understanding anchoring mechanisms for polarizable molecules on uniformly poled surfaces allows for a fuller appreciation of how ferroelectric surfaces can be used for controlling molecular organization.

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