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UV Photo-enhanced Adsorption of DNA on Mica¹ SARAH RUPPRECHT, YANG SUN, ROBERT NEMANICH, Department of Physics, Arizona State University, NSL TEAM — Studies of DNA adsorption on mica have contributed to the further understanding of signal detection and immobilization for biosensors. Over the past two decades DNA adsorption has been investigated to further understand how immobilization occurs. The experiment presented here explores the effects of UV light exposure on double-strand lambda DNA immobilization on mica. In this research atomic force microscopy (in non-contact mode) was employed to image mica surfaces after exposure of the surface to a buffered solution containing DNA. The mica surfaces were immersed in the liquid for 5 min with and without UV exposure from a Hg arc lamp. The surfaces were rinsed and then imaged in the AFM, and individual DNA strands were clearly evident. The sample incubated with UV light showed a significantly enhanced adsorption. The results are discussed in terms of the photo excited carriers in the mica and charge transfer processes and their affect on the adhesion process. Further experiments are planned to observe the effects of UV exposure to adsorption of DNA on polarity patterned surfaces of ferroelectric materials.

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