

Abstract Submitted
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Probing DNA-Protein Interactions on Surfaces Using Spectral Self-interference Fluorescence Microscopy¹ MEHMET DOGAN, Boston University Physics Department, PETER DROGE, Nanyang Technological University School of Biological Sciences, Singapore, ANNA K. SWAN, SELIM UNLU, Boston University ECE Department, BENNETT B. GOLDBERG, Boston University Physics Department — We are probing the interactions between double-stranded DNA and integration host factor (IHF) proteins [1] on surfaces using Spectral Self-interference Fluorescence Microscopy (SSFM) [2]. The probing technique utilizes the spectral fringes produced by interference of direct and reflected emission from fluorescent molecules. The modified spectrum provides a unique signature of the axial position of the fluorophores. Using the SSFM technique, we probe the average location of the fluorescent markers attached to the DNA molecules to study the conformational changes in double-stranded DNA tethered to SiO₂ surfaces. In the presence of IHF, a DNA bending protein, we observe reduction in the vertical position of fluorescent molecules suggesting the formation of IHF-DNA complex and IHF-induced DNA bending. We also discuss the results with different IHF strains and different binding conditions. [1] Q. Bao et. al., Gene, Vol.343 pp.99-106 (2004) [2] L.A. Moiseev et. al., Journal of Applied Physics, Vol.96, pp. 5311-5315 (2004)

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