

## **Abstract: NeSA202100poster-02: Unfolding of Histones Compacted-DNA by Single Molecule Horizontal Magnetic Tweezers**

**Time: 12:00-1:00 PM**

### **Presenter:**

Santosh Gaire

### **Authors:**

Santosh Gaire<sup>1,2</sup>, Roberto Fabian<sup>1,2</sup>, Pamela Tuma<sup>3</sup>, Ian Pegg<sup>1,2</sup> and Abhijit Sarkar<sup>1,2</sup>

<sup>1</sup>*Department of Physics, The Catholic University of America, Washington DC 20064*

<sup>2</sup>*Vitreous State Laboratory, The Catholic University of America, Washington DC 20064*

<sup>3</sup>*Biology Department, The Catholic University of America, Washington DC 20064*

We report results from single molecule experiments on nucleoprotein complexes consisting of DNA complexed with octameric core particles formed from core histones and lambda-DNA. These arrays were reconstituted on DNA tethers held under mechanical tension. Using a horizontal magnetic tweezers system, we applied forces in the  $\sim 2 - \sim 70$  pN range on the compacted DNA tethers. We detected and characterized mechanically-induced dissociation of nucleoprotein complexes when a certain critical force threshold  $f^*$  was reached. These events corresponded to well-defined step-like extension changes expected from disruption of one or more nucleosomes. Our experiments allowed us to characterize the step-length distribution for nucleosomes reconstituted.