

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Single Human Plasma Fibrinogen Molecule Imaging by PEEM and AFM XIANHUA KONG, JACOB GARGUILO, CRISSY RHODES, ROBERT NEMANICH — Human Plasma Fibrinogen (HPF), which is a protein involved in thrombosis, was studied by photoelectron emission microscopy (PEEM) and Atomic Force Microscopy (AFM). PEEM, using the spontaneous emission output of the Duke OK-4 free electron laser (FEL), clearly reveals the trinodular structure of the single fibrinogen molecule absorbed on oxidized silicon substrates. Moreover, PEEM images excited using various wavelengths between 249 and 310 nm reveal ionization thresholds of 4.6 eV for HPF. In addition, hydrogen-terminated silicon (H-Si) substrates and oxidized silicon substrates serving as model hydrophobic and hydrophilic surfaces were used to investigate the absorption coverage difference of fibrinogen molecules using ambient AFM. The images show that the fibrinogen absorption on H-Si substrates is significantly greater than that on the oxidized substrates.

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Date submitted: 04 Dec 2005

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