Abstract Submitted for the OSS17 Meeting of The American Physical Society

X-ray Photoemission Spectroscopy Study of Metal Surfaces BRIAN SCHUBERT, DAVID BERNARD, NICHOLAS MCGUIGAN, MAR-TIN STRONG, SNJEZANA BALAZ, KATHRYN SHIELDS, HOLLY MARTIN, Youngstown State Univ — Various titanium analogs were treated with noncarcinogenic deposition agents, acetone, heptane, ethanol, as an alternative to the carcinogenic toluene. For use in biological implants, a non-carcinogenic solution such as these would be required by the Food and Drug Administration (FDA). The goal is to adhere chitosan to the titanium surface by various treatments involving a wash of the mentioned solvents. Surface scans were conducted to determine the activation of the compounds within each titanium surface using X-ray Photoemission Spectroscopy (XPS) in an Ultra High Vacuum (UHV). Analyzing the binding efficiency of each compound in the acetone, heptane, ethanol, or toluene solution determined that the titanium was activated by the treatment. Some contamination between samples was recorded by trace silicon and nitrogen levels, and oxygen and carbon was activated to varying extents between the different samples. With this investigation, we will determine the best solution to safely and effectively adhere chitosan.

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Date submitted: 04 May 2017

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