

Abstract Submitted
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X-ray Photoemission Spectroscopy Study of Implant-Grade Titanium Surfaces and the Charge Transfer at their Interfaces after Various Treatments to Improve the Metal's Coating BRIAN SCHUBERT, DAVID BERNARD, HANNAH SENEDIK, SNJEZANA BALAZ, KATHRYN SHIELDS, HOLLY MARTIN, Youngstown State Univ — Various titanium analogs were treated with non-carcinogenic deposition agents, acetone, heptane, and 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 using aminopropyltriethoxysilane (APTES) and glutaraldehyde as precursory agents in the deposition process involving a wash of the mentioned solvents. Surface scans were conducted to determine the binding efficiency and charge transfer of each compound in the acetone, heptane, ethanol, or toluene solution using X-ray Photoemission Spectroscopy (XPS) in an Ultra High Vacuum (UHV). Some contamination between samples was recorded by trace silicon and nitrogen levels, and oxygen and carbon were activated to varying extents between the different samples. Through this investigation, the best solution to safely and effectively adhere chitosan will be determined.

Brian Schubert
Youngstown State Univ

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