

**The Tissue Engineering-Surface Science Intersection:
Advancing 3D Biology with 2D Methodology**

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The biointerface and related surface science ideas have had profound impact on biomaterials science since at least the 1960's. In the 21st century there is much discussion of tissue engineering, clearly a "3-D" phenomenon. This talk will review some history of the biointerface, illustrate modern trends, and show how biointerface ideas can be applied to 3-D scaffolds. Techniques such as electron spectroscopy for chemical analysis (ESCA) and secondary ion mass spectrometry (SIMS) will be featured. SIMS has proven to be particularly powerful for cell identification in culture dishes and for the analysis of decellularized extracellular matrix scaffolds. SIMS also provides much information on synthetic scaffold materials. Finally, this talk will discuss healing, biointegration and regeneration, particularly in the context of new scaffolds made by a sphere-templating process.