

# GLOBAL E-CONFERENCE ON CHEMISTRY AND CHEMICAL ENGINEERING

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#### Modifying Surface Morphology of Niobium Oxide through Double Anodizing and Etching for Enhanced Cell Adhesion at Micro and Nanoscale

Niobium surface has been modified with a double process to tune both micro and nano morphology. A continuous micro-sized porous surface was obtained by performing a first step anodizing in a solution containing Ca and P. The effects of limiting potential (200V and 250V) and anodizing time were analyzed using SEM and AFM. Additionally, side XPS experiments were conducted to measure the amounts of Ca and P present in the oxide. The 200V anodized sample, which was free of fractures, underwent an acid etching process to produce nano-sized pits on the oxide surface. In vitro tests were conducted to evaluate the improved cell adhesion ability resulting from the acid-etched process. Side experiments were conducted to test the possibility to functionalize the anodized samples with amino-phosphonate as a linker for further coupling (i.e. antifouling, anti-microbial peptides, antibiotics).

**Keywords:** Biomaterials, anodizing, niobium, cells, chemical etching.

#### Biography:

**Dr. Paolo Canepa**, graduated in Physics at the University of Genova (Italy) and obtained his PhD in Material Science and Technology at the Chemistry department of Genova. After three years as post-doc, Paolo has become researcher in the Physics department of Genova. His research activity deals mainly with growth and functionalization of metal oxides for the development of 3D scaffolds and improvement of surface biocompatibility. His studies deal also with studies on the organic-inorganic bio-interfaces for the development of selective biosensing surfaces and for reduction of macromolecules adsorption on surfaces.