

## The influence of electrochemistry on tribocorrosion of Titanium alloys

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Titanium alloys are widely used for medical devices as knee and hip prosthesis, because of its mechanical, chemical and electrochemical properties, as well as its biocompatibility. Flexibility, mobility, materials combination, among others, are some of the advantages that modular artificial joints brought to patients and medical. However, several problems have been associated to this modularity, and in turn, to its tribo-corrosion properties, which are strongly influenced by the electrochemical conditions. Indeed, most of the revision procedures could be attributed to the tribochemical degradation suffered by prosthesis made of titanium alloys.

This work presents the influence of the electrochemical condition on Ti6Al4V alloys under fretting regime. A Ti6Al4V/Al<sub>2</sub>O<sub>3</sub> couple were evaluated under a rig configuration, where the same load, movement and stiffness were applied under different electrochemical condition. As the electrochemical conditions inside the human body are unclear, tribocorrosion test were done under anodic and cathodic condition. In addition, a comparison of the morphological in-vitro findings is done respect to retrievals prosthesis, seeking to establish a plausible electrochemical condition within the body.