

Tribocorrosion: an overview

演者: Stefano Mischler 先生

Senior Scientist, Lecture

Institute of Materials, EPFL Swiss Federal Institute of
Technology in Lausanne (Switzerland)

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Abstract

Tribocorrosion is a material deterioration or transformation resulting from the combined action of wear and corrosion. Tribocorrosion takes place in many engineering systems operating in corrosive environments such as : biomedical implants in body fluids, cutting tools in water coolants, mining equipment, and CMP processes. Most of these applications involve passive metals

In tribocorrosion the mechanical and chemical degradation mechanisms mutually depend on each other in a complex way. Therefore the tribocorrosion rate is not simply the sum of corrosion rate and wear rate taken separately. New multi-disciplinary and multi-scale concepts are necessary for understanding and controlling tribocorrosion.

This talk will give an overview on basic aspects of wear and corrosion, tribocorrosion techniques and experimental results, crucial tribocorrosion phenomena and their predictive modelling. Emphasis will be given on the application of multi-disciplinary and multi-scale approaches that are now becoming increasingly necessary in engineering science.