

Tribocorrosion studies of industrial systems benefits, limitations and challenges

Dr. Grazina STACHOWIAK

Department of Mechanical Engineering
Curtin University of Technology
Perth, Western Australia

Tribocorrosion is a synergistic effect of mechanical and chemical interactions when a material undergoes wear in a corrosive environment. Research in tribocorrosion is gaining attention due to its practical importance and potential economic benefits. Examples of tribocorrosion are found in diverse industries, from mining and mineral processing to nuclear power to biomedical devices. However, tribocorrosion interactions are still poorly understood.

In this seminar, applications of triboelectrochemical techniques to study corrosive wear of wear resistant industrial materials will be described. Emphasis will be put on the benefits and limitations of selected techniques. The materials discussed are multiphase structures, often containing hard carbides. The complex and nonhomogeneous microstructure of the alloys compounds the difficulty of interpreting the test results. Examples of electrochemical techniques to study tribocorrosion of high-Cr white cast irons and WC/Ni matrix claddings will be described. Research challenges in this area will be indicated.