Research, Informatics and Graduate Studies

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PhD / Master (MSc) Positions in Surface Engineering and Corrosion- Group of Prof. Aleksandra Baron-Wiechec (GS-2019002)

The Materials Science and Engineering Program (group of prof. Aleksandra Baron-Wiechec) is looking for 2 PhD/Master students to conduct experimental research in a topic centered around corrosion and protection of metals, nuclear fusion materials & technology or Biomaterials. Contract duration for PhD: 3 + 1 year.

Corrosion and Surface Engineering is an interdisciplinary subject, which encourages specialists from different academic disciplines to cross their traditional boundaries. Join our team, we work in a collaborative international environment.

Project Details
Two MSc/PhD positions are available.

1. Tailoring of nano-metric porous films on metals and alloys.

Porous anodic films are important for the protection of metals and alloys against corrosion and attracted significant attention for use in nanotechnologies, biomedical devices, sensors, Li-batteries. The research methodology is based on tracer studies of nano pores development, using tracers incorporated into the anodic oxide from the substrate and from the electrolyte. The tracers are located with precision by high resolution electron microscopy, and quantified by ion beam analysis. The work will examine in particular the behaviour of the tracers in the films, the efficiency of film growth and the incorporation of species derived from the electrolyte. These factors have a major bearing on identification of the mechanism of pore generation.

2. MagniFiCor

Corrosion has been a leading cause of failure in structural materials in most industrial applications for hundreds of years. The proposed research program will identify the basic reactions controlling electrochemical processes at the interface of materials and corrosive environment in the presence of an external magnetic field, providing corrosion studies in a nuclear fusion relevant environment. To date no significant work has been carried out on this subject. The aim of this project it to set up a special corrosion test rig, carry out the experimental work on selected metallic alloys and characterize the corrosion mechanism.

Keywords
Metallic materials, protective coatings, multi-oxides, porous nanostructures, surface engineering, anodizing, corrosion, magnetism, Ion Beam Analysis, nuclear fusion technology.

Selection Criteria
1. for PhD applicants: Master degree (or equivalent) in Chemical Engineering, Material Science, Chemistry or Physics (essential)

2. Practical laboratory experience related to one or more areas: knowledge of

Position
PhD/Master (MSc)

Program
Materials Science and Engineering

Research Area
Surface Engineering and Corrosion

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Application Deadline
Open till filled

Location
Guangdong Technion – Israel Institute of Technology (GTIIT), China & Technion-Israel Institute of Technology, Haifa

Date Posted
Jan. 10 2019

Fees & Finance

how to apply

electrochemical processes related to aqueous corrosion, knowledge on the use of electrochemical methods to characterize corrosion processes, anodizing, coating formulation on metals, practical knowledge of mass spectrometry or vacuum systems, for example ICP-MS, GC-MS, TDS (essential)

3. Strong interest to work temporarily at large-scale research facilities in China and Europe (essential)

4. Good communication skills, good command of English (essential)

5. Ability to work under your own initiative, independently as well as in a team environment (essential)

6. Ability to author scientific reports and co-author scientific publications (essential)

7. Familiarity with the operation of advanced microstructural and chemical characterization: SEM, TEM, EBSD, SIMS, AFM and EDX analyses (desirable)

8. practical knowledge of electronics and basic knowledge of one programming language, preferably LabVIEW, but also C++, Visual Basic, Python or Delphi would be considered (desirable)

9. The PhD candidate must fulfill the requirements for admission to the Technion Graduate School and needs to comply with its regulations leading to the PhD/Master degree: https://graduate.technion.ac.il/en/prospective-students/