Prezados colegas,

O PGMAT gostaria de anunciar a visita do Prof. Michele Fedel, da *Universtià degli Studi di Trento* – ITA (UniTn). O Prof. Fedel, estará na UFSC entre os dias **04 - 12 de dezembro**, apresentando a Universidade de Trento, discutindo projetos de pesquisa entre as duas instituições, mobilidade bi-lateral de estudantes tais como o doutorado pleno na UniTn. Destaca-se ainda o minicurso que será ministrado por ele: **Corrosão, aspectos gerais e métodos de prevenção**. O minicurso será dado no **Auditório Bloco – A** da Engenharia Mecânica em inglês e será dividido em três sessões conforme detalhado abaixo:

MINICURSO

Com o objetivo de mitigar o problema da corrosão em metais o Programa de Pós Graduação em Ciência e Engenharia dos Materiais (PGMAT) convida todos para participarem do minicurso [1]:

Corrosão: Aspectos Gerais e Métodos de Prevenção.

Palestrante - Prof. Michele Fedel, Ph.D. - University of Trento, Italy.

Local - Auditório Engenharia Mec - Bloco A - UFSC

Data	Horário	Tema
04-Dez	14 - 16h	Corrosion - A Natural but Controllable Process
05-Dez	10 - 12h	Organic Coatings and recent advances of Intrinsic Conductive Polymers for corrosion protection purposes
07-Dez	10 - 12h	Surface functionalization of metals for enhanced corrosion protection

[1] O minicurso será ministrado em língua inglesa

UNIVERSITY OF TRENTO - Italy

Sessão 1 - 04/Dez, 14:00 – 16:00h - Corrosion of metals: A natural but controllable process.

Sessão 2 - 05/Dez, 10:00 – 12:00h - Organic Coatings and recent advances of Intrinsic Conductive Polymers for corrosion protection purposes.

Sessão 3 - 07/Dez, 10:00 – 12:00h - Surface functionalization of metals for enhanced corrosion protection.

MINICURSO – Sessão 1

Corrosion of metals: A natural but controllable process

Data e hora: 04/12/2017, 14:00 – 16:00h
Local - Auditório Engenharia Mec - Bloco A – UFSC

Corrosion of metals can be attributed several definitions; it mainly signifies the degradation or deterioration of the metal with consequent loss of properties and reduction of the service life. The economic impact of corrosion of metals is a major issue among modern societies. The costs of corrosion in most of industrialized nations, the corrosion cost is estimated to be 4 – 5% of the GNP and according to the *Associação Brasileira de Corrosão*, Brazil is placed into this scenario. Corrosion of metals, despite the spontaneous from thermodynamic point of view, can be controlled. The science of corrosion prevention and is challenging but can be achieved by understanding the effects of environmental conditions; right choice of materials and proper mitigation methods; as well as other considerations before determining the specific corrosion problem and specifying an effective solution.

MINICURSO – Sessão 2

Organic Coatings and recent advances of Intrinsic Conductive Polymers for corrosion protection purposes

Data e hora: 05/12/2017, 10:00 – 12:00h
Local - Auditório Engenharia Mec - Bloco A - UFSC

Anticorrosion maintenance paints are widely used for the protection of metal structures. These coating systems are important for markets such as electronics, automobile, aerospace, marine, construction and off-shore oil industries. In general, solvent-borne anticorrosion coating system provides a better protection for metal structures than the existing waterborne ones. This is due to the highly hydrophobic nature of the coating that effectively prevents water permeation to the steel surface through the coating layer.
Growing environmental concerns regarding the use of toxic metals in anticorrosion coating formulations have led to a new coating strategy employing inherently conducting polymers (CP) as a key component. CPs (such as polyaniline, polypyrrole and polythiophene) are electrically conductive owing to a system of conjugated double bonds. Furthermore, metal passivation complements this conductive nature and offers a viable alternative to traditional corrosion protection. A key potential advantage that the CP coating technology offers is toleration of pin holes and minor scratches. The basis for this argument is that, since the CP coating is conductive, the entire coating acts to passivate any areas of exposed metal which is known as the self-healing property of conducting polymers. Corrosion, being an electrochemical phenomenon, can thus be tackled through the use of electrochemistry and conducting polymers.

MINICURSO – Sessão 3

Surface functionalization of metals for enhanced corrosion protection

Data e hora: 07/12/2017, 10:00 – 12:00h

Local - Auditório Engenharia Mec - Bloco A – UFSC

The surface of many aluminum alloys has been treated with Cr^{6+} compounds for many years. Chromates have been recognized to be able to properly functionalize the aluminum surface, providing chemical and electrochemical stability, very good durability upon exposure in aggressive environments and an effective interaction with organic coatings (paints). However, on September 21st 2017 the EU is going to ban the use of hexavalent chrome solutions for surface finishes. In this context, during the last decades, the material scientists have been developing new environmentally friendly chemical treatments to functionalize aluminum surface, such as: sol-gel coatings (mainly based on Si, Zr & Ti alkoxide precursors), Ti,Zr-fluoric acid based conversion layer, lanthanides (mainly Ce and La) based conversion coatings and layered double hydroxides (LDHs). Among them, the latter seems to be a particularly interesting solution for the functionalization of light alloys (Mg & Al based) surface. By modifying the chemistry of the LDHs conversion treatment it is possible to obtain a special microstructure to tune the surface wettability of Al from hydrophilic to hydrophobic, to promote the formation of reservoirs for chemical species, to deliver drugs, to exchange ions, to improve the optoelectronic properties, the corrosion resistance and the anti-fouling. In this frame, the aim of the PhD project is to develop new surface functionalization treatments for aluminum alloys based on LDHs.