

CALL FOR PAPERS

Corrosion is one of the most important topics which cause huge economic and environmental damage. Mitigation of corrosion is one of the burning issues in research to find effective solution to it. New techniques, coatings, inhibitors, and nanocomposites are being developed to cope with this problem. Advanced electrochemical techniques including electrochemical frequency modulation (EFM), electrochemical noise (EN), scanning vibrating electrode technique (SVET), scanning electrochemical microscopy (SECM), and scanning Kelvin probe (SKP) along with impedance and polarization are highly required to detect the corrosion behavior of metals and alloys in various aggressive media.

A major part of the studies of the corrosion processes has been performed using conventional electrochemical techniques, which lack spatial resolution and provide little information on behavior at sites of corrosion initiation or at defects. There is a need for auxiliary techniques with enhanced spatial resolution which can acquire data in real time and can provide corroborative evidence of the reactions involved. Based on this scanning techniques coupled with spectroscopic techniques can provide a fast chemical and morphologic characterization (identification of compounds deposited on the surface and porosity analysis) on an atomic scale.

Advanced characterization techniques including high resolution scanning electron microscopy (HR-SEM), scanning transmission electron microscopy (STEM), scanning tunneling microscopy (STM), X-ray photoelectron spectroscopy (XPS), and atomic force microscopy (AFM) as well as scanning vibrating electrode technique (SVET), scanning electrochemical microscopy (SECM), and scanning Kelvin probe (SKP) are fundamental and crucial for the detailed identification of the metals and alloys especially when they undergo localized corrosion and/or are submitted to the corrosion protection methods.

This special issue aims at covering recent progress and new developments in surface mechanisms, characterization, real time simulation using Scanning techniques, and approach to improving corrosion mitigation properties. All aspects related to the use of advanced scanning techniques for the structural characterization of metallic materials are required. The utilization of advanced scanning instrumentation, modeling-assisted microscopy, in situ studies, and quantitative SEM and STEM techniques is especially invited. High-quality original articles as well as review articles which describe the current state of the art are also welcomed.

Potential topics include but are not limited to the following:

- ▶ Recent studies in mitigation of corrosion for metals and alloys
- ▶ Computational discovery of potential corrosion protecting materials for metals and alloys
- ▶ QSAR as a tool for studying activity/property relationships of materials for corrosion mitigation
- ▶ Electrochemical and surface scanning techniques to be emphasized
- ▶ New analytical and electrochemical methods in corrosion mitigation
- ▶ Studies including SECM, SKP, and SVET are encouraged
- ▶ For all papers the scanning characteristic technique is required

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/scanning/acmt/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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