Análise comparativa do uso de μ-sondas eletroquímicas no estudo na nucleação da corrosão localizada

Comparative analysis of μ-electrochemical probe techniques used to study the nucleation of localized corrosion

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Resumo: Microelectrochemical techniques have been used lately to access the localized corrosion of structural metallic materials given new insights on the kinetics of nucleation and growth of pitting and stress corrosion cracking phenomena, but sometimes leading to false interpretations.

In the present work, we analyze the use of Scanning Vibrating Electrode Technique (SVET) and the so-called Scanning Electrochemical Microscopy (SECM) used in the open circuit potential and under applied potential, as well as under simultaneously applied strain. Common errors and misinterpretation of results, and the limitations and artifacts to overcome the lateral resolution limitations are analyzed and critically to compared to the microcapillary cell (MEC) and the wire bean electrode.

More specifically, the results analyzed concern the nucleation of pits, associated or not to mechanical stresses, on anodized Al-alloys as well as the pitting nucleation associated with nonmetallic phases (inclusions) present on steels.

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