

New electrochemical techniques used in corrosion to monitor the efficiency in acidic medium

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Abstract

The use of electrochemical techniques in corrosion is very important as it helps to understand the mechanism at the electrode surface in a particular solution. Electrochemical impedance spectroscopy (EIS) is the most traditional method used in electrochemistry to determine the electrode behavior. Electrochemical impedance spectroscopy provides valuable information about the Nyquist, bode and phase angle plots together. EIS was used to determine the efficiency of some corrosion inhibitors in the corrosive solution. Scanning electrochemical microscopy (SECM), and scanning vibrating electrode (SVET) were used to detect the localized electrochemical behavior of the different metal samples. Various concentration of inhibitors were used to detect the changes in the electrochemical nature. These variations in presence of inhibitors were used to calculate the inhibition efficiencies of the inhibitors. The study was carried on for electrochemical frequency modulation (EFM) and electrochemical frequency modulation trend (EFMT). Further, the polarization tests (Tafel) were done to determine the corrosion rate and inhibition efficiency of the inhibitor.

composites, and petroleum engineering. He got the prestigious Sichuan 1000 Talent Award from the Sichuan government, China for his outstanding research contributions as a faculty. He got the President's Award for exceptional post doctoral research work. He also received the Young Scientist Award from UPCST, Lucknow, India. He has published more than 100 SCI peer-reviewed research papers in high impact journals. He is acting as reviewer for more than 40 high impact journals and editor for few journals. He is included as board member in several journals due to his contributions in the field of corrosion. Dr. Singh has been invited to present his work in several national and International conferences, seminars and workshops. He is the author of several book chapters and he is the editor of a book which is ready to be published by Intech publishers, London, United Kingdom. He has drafted five patents based on his new and innovative findings. He has finished several state and provincial projects in China and India. He is the member of NACE (National Association for Corrosion Engineers, Houston, USA) and American Chemical Society (ACS). He is having a good collaboration with other corrosion groups in Saudi Arabia, Germany, South Korea, United Kingdom, Portugal, Italy and South Africa.

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Biography:

Dr. Ambrish Singh is working as Professor in School of Materials Science and Engineering, Southwest Petroleum University, China. He is leading the Corrosion Research Group (CRG) with master students, Ph.D. students and post doc researchers. His research interests are mainly focused on corrosion, electrochemistry, green chemistry, quantum chemistry, smart coatings, polymers, nano-materials,