Journal of Adhesion Science and Technology
Latest Articles

123
Research Article

Assessment of the corrosion behaviour of untreated and chemically treated pure magnesium in simulated body fluid

Husnu Gerengi
,
Marina Cabrini
,
Moses M. Solomon
&
Ertugrul Kaya

Received 13 Apr 2022, Accepted 23 Jun 2022, Published online: 07 Jul 2022

- Download citation
- https://doi.org/10.1080/01694243.2022.2095153

Abstract

The corrosion behaviour of pure Mg in simulated body fluid (SBF) and the effect of chemical treatment on the corrosion resistance property were investigated using DEIS (dynamic electrochemical impedance spectroscopy), EIS (electrochemical impedance spectroscopy), PDP (potentiodynamic polarization), SEM (scanning electron microscopy), AFM (atomic force microscope), and pH measurement techniques for 30 h. NaOH or H_2O_2 were utilized for the chemical treatment. The DEIS was used for the first time in the investigation of Mg corrosion in SBF. Results obtained disclosed that the chemical treatment benefitted the anticorrosion property immensely. Results from both the electrochemical and surface analysis techniques are consistent.

Keywords:

- Corrosion
- pure Mg

- simulated body fluid
- biodegradable
- dynamic electrochemical impedance spectroscopy

Acknowledgements

Husnu Gerengi expresses his appreciation to The Scientific and Technological Research Council of Turkey (TUBITAK) for financial support under the TUBITAK 2219-International Postdoctoral Research Fellowship (Program Project Number: 1059B191900111).