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Editorial

Current Trends in Magnesium Corrosion Research

This special issue of *CORROSION* focuses on the corrosion of magnesium and its alloys. It is the third of its kind to be published by NACE International over the past five years, reflecting the significant growth in interest of this topic within the corrosion science and engineering community over this time period. It is with great pleasure that we served as the guest co-editors for this issue, which presents original articles that have been contributed from research groups spanning the globe.

Magnesium and its alloys continue to garner substantial interest as a strategic material for engineering applications. This is particularly so for structural lightweighting in the transportation and electronics industries, biodegradability/bioresorbability in medical implants, and high-efficiency electrodes in energy generation and storage devices. While considerable advances in the fundamental understanding of the corrosion resistance of magnesium have been made over the past few years, further advances are certainly required before increases in utilization are realized.

The articles in this special issue represent a sampling of the current trends in magnesium corrosion research that is on-going across the globe. The tone of this issue is set by the review article summarizing the outcome of a recent meeting (April 2016) hosted by the United States Department of Energy (U.S. DOE) Vehicle Technologies Office (VTO) on the current status and future directions in magnesium corrosion research. This overview is then followed by a set of articles probing the fundamental electrochemical behavior of Mg, with a focus on passivity and its breakdown and the associated cathodic activation of dissolving anodic sites. The focus then shifts to more practical corrosion behavior aspects of commercial magnesium alloys. The issue is then capped off with a multi-scale modeling paper incorporating plasticity and mechanical damage along with corrosion.

We hope you find the sampling of articles as topical, informative, and thought-provoking as we have.