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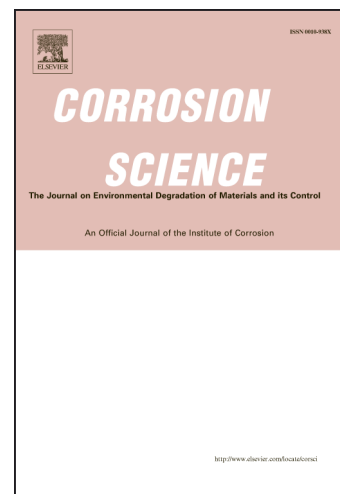
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Effects of tensile and compressive deformation on corrosion behaviour of a Mg-Zn alloyYang Zheng^{a,b}, Yan Li^{a,c,*}, Jihua Chen^d, Zhengyang Zou^d

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Abstract

The corrosion behaviour of a Mg-2.65wt.%Zn alloy after tensile and compressive deformation has been investigated using dynamic polarization and immersion tests. The microstructure has been characterized using X-ray diffraction spectroscopy and transmission electron microscopy. Tensile and compressive deformation introduces high density dislocations and deformation twins to the alloy and accelerates the corrosion rate. This is ascribed to the enhanced stress corrosion associated with dislocations and deformation twins. In particular, we find that tensile deformation triggers a different intergranular corrosion mechanism in contrast to compressive deformation. The relationship between the corrosion behaviour and microstructure has been discussed.

Keywords:

- A. Magnesium
- B. TEM
- B. Polarization
- B. Weight loss
- C. Effects of strain

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