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Effects of cerium ion implantation on the corrosion behavior of magnesium in different biological media

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Abstract

Cerium ion implantation is conducted to modify the surface properties of magnesium. Electrochemical polarization and immersion tests show that the corrosion resistance of the Mg samples is improved in artificial hand sweat, Ringer's solution, and complete cell culture medium (cDMEM) after Ce ion implantation with the most significant improvement observed from cDMEM. The retardation effect is attributed to the formation of a robust cerium-rich oxide layer formed by energetic ion bombardment and implantation.

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