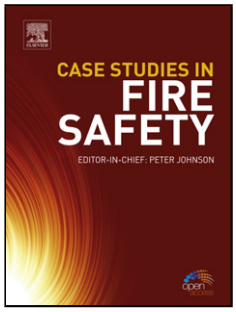

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Effect of crystallographic orientation on the discharge and corrosion behaviour of AP65 magnesium alloy anodes

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Highlights

- The (0001) basal planes have lower corrosion rates at open circuit potentials.
- The (0001) basal planes inhibit the self-discharge of AP65 at 180 mA cm^{-2}.
- The $(11\bar{2}0)$ and $(10\bar{1}0)$ prismatic planes exhibit stronger activity during discharge.
- The $(11\bar{2}0)$ and $(10\bar{1}0)$ prismatic planes improve the anodic efficiency at 10 mA cm^{-2}.

Abstract: AP65 doped with different elements are rolled into the anode plates for Mg-air battery and higher-power seawater activated battery. The discharge and corrosion behaviour of their cross-section surfaces (CS) and rolling surfaces (RS) is systematically studied and the results show that the RS consisting of (0001) crystallographic planes have lower corrosion rates and inhibit the self-