Mini Review

Research Progress of Magnetic Field Techniques for Electrodeposition of Coating

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Recent advances in electrodeposition techniques under magnetic fields are introduced. The mechanism of magnetic fields to electrochemical deposition technology, including mass transfer, coating structure modification, electrochemical reaction and crystal orientation are reviewed. Current research results show that MHD effect induced by the Lorentz force and the magnetization effect are the main factors. The research situation of single metal layer, alloy layer, composite coatings and high entropy alloy layer under magnetic fields is summarized. Finally, and the problems existing in current research of magnetic electrochemistry are pointed out, and the development prospect of controllable magnetoelectrodeposition is also proposed.

Keywords: Electrodeposition; Magnetic field; MHD effect; Magnetization effect; Prospect

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