Short Communication

The Effects of Pulsed Current Parameters on Porosity of Copper Prepared by Jet Electrodeposition

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Surface texturing has become an increasingly prevalent approach to improve the tribological properties of materials. The present work aims to study a novel texturing technology. A copper coating with a porous surface structure was directly prepared on stainless steel using a copper sulfate solution bath via high-speed jet electrodeposition. A fine, uniform honeycomb structure with micron sized pores can be achieved using a pulsed current. The duty cycle, current density and current frequency of the pulsed current have a notable influence on the microstructure of the deposited surface. Decreasing the duty cycle and increasing the current density can help to achieve a homogeneous and fine porous surface. The mechanism for depositing a porous surface was discussed according to the roles of the current parameters in the formation of the coating microstructure.

Keywords: jet electrodeposition; porous structure; pulse current;

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