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Electrodeposition of copper on Niobium for cryocooler application

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The electrodeposition of copper onto niobium using commercial acidic and alkaline electrolytes was tested. The continuous dense polycrystalline copper films were successfully obtained in aqueous alkaline-type bath containing copper sulphate, sodium hydroxide and sodium gluconate. The effect of benzotriazole and sodium lauryl sulphate additives on the morphology and crystal structure of the deposited copper was investigated by optical and scanning electron microscopy, and X-ray diffraction. No copper oxides were found in the grown films. Copper films had moderate adhesion properties that would be insufficient for cryocooler application. We are currently exploring different compositions of electrolyte baths for obtaining the coatings on niobium with improved adhesion.

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Footnotes

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Yes

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