Study on Properties of Polytetrafluoroethylene Doped CoMoP Alloy Films Prepared by Plating Method

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Polymer PTFE was added into the plating bath to prepare CoMoP/PTFE by plating method. Deposition rate, thickness, friction coefficient, magnetic performance and corrosion resistance of CoMoP/PTFE alloy film was investigated. PTFE is a kind of polymer materials with lower friction coefficient and higher impedance. The PTFE doped in the CoMoP/PTFE could greatly increase corrosion resistance and magnetic performance. The CoMoP/PTFE alloy film obtained from the bath with 15 g/L PTFE has lower friction coefficient, optimal corrosion resistance and great magnetic performance. Surface morphology of the CoMoP/PTFE alloy film is a kind of typical nodular particles. PTFE is beneficial to reduce grain size of CoMoP/PTFE resulting in denser surface morphology. However, excessive PTFE in the plating bath tends to agglomerate resulting in the decrease of deposition rate and deterioration of film quality that contribute directly to the decrease of corrosion resistance and magnetic performance.

Keywords: Polymer PTFE; Plating method; CoMoP/PTFE alloy films; Corrosion resistance

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