Short Communication

Study of Electrodeposited Ni-TiAlN Composite Films

Esmar Budi*, Alief Restu, Bagus Ksatriotomo, Iwan Sugihartono, Agus Setyo Budi

Department of Physics, Faculty of Science and Mathematics, Universitas Negeri Jakarta,
Jl. Pemuda No. 10, Jakarta 13220, Indonesia

*E-mail: esmarbudi@unj.ac.id

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A study results of electrodeposited Ni-TiAlN composite films is reported. The composite film was electrodeposited from electrolyte solution of 0.38 M NiSO₄·6H₂O, 0.17 M NiCl₂·6H₂O and 0.49 M H₃BO₃ adding with various electrodeposition current from 2 mA to 4 mA and TiN and AlN powder from 2 gr/lit to 8 gr/lit. The morphology and compositions were characterized by using SEM/EDS while the crystal structure was characterized by XRD. The results show that the morphology and structure of composite films were influenced by electrodeposition parameters such as electrodeposition current and nitride particle concentration. The evolution of surface morphology and structure was occurred as the electrodeposition current and nitride particles concentration were increased. The smoothest and uniform film surface was achieved at high electrodeposition current. However, the agglomeration and initialy spalling film were occurred at high nitride particles concentration. Structure analysis of the films revealed the presence of TiN and AlN crystalline in the composite film.

Keywords: Electrodeposition, Ni-TiAlN composite film, tungsten carbide, morphology, composition, structure.

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