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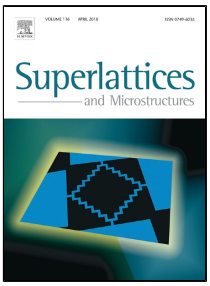

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Indium Hexagonal Island as Seed-Layer to Boost a-axis Orientation of AlN Thin Films

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Abstract.

Highly a-axis oriented aluminum nitride films have been grown on Indium coated (100) Si substrate by DC reactive magnetron sputtering. It is shown that In incorporated layer improve the extent of preferential growth along (100) axis and form dense AlN films with uniform surface and large grains, devoid of micro-cracks. As revealed by SEM cross section images, AlN structure consists of oriented columnar grains perpendicular to the Si surface, while AlN/In structure results in uniformely tilted column. SEM images also revealed the presence of In hexagonal islands persistent throughout the entire growth. Micro -Raman spectroscopy of the surface and the cross section of the AlN/In grown films evidenced their high degree of homogeneity and cristallinity.

Keywords:

AlN; thin films; Indium; Hexagonal Island; a-axis.

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