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# Gas Barrier Properties of Nanolaminated Single Inorganic Film Deposited by Neutral Beam Assisted Sputtering Process

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In this study, we developed an Al2O3 nanolaminated single gas barrier layer using a Neutral Beam Assisted Sputtering (NBAS) process. The NBAS process can continuously change crystalline structures from an amorphous phase to a nanocrystal phase with various grain sizes and lead to the formation of a nanolaminated structure in the single inorganic thin film. As a result, the water vapor transmission rates (WVTR) of the nanolaminated Al2O3 thin films by NBAS process have improved more than 40% compared with that of conventional Al2O3 layers by the RF magnetron sputtering process under the same sputtering conditions.

**Keywords:** Gas Barrier, Nanolaminate, Al2O3, WVTR