Initial Characteristics of ALD Process

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In this presentation, characteristics of atomic layer deposition (ALD) will be discussed at the initial stage of thin film formation, such as passivated and enhanced growth compared to ideal growth depending on substrate properties in terms of growth per cycle (GPC). Initial reactions between precursors and substrates result in abnormal deposition including interfacial layer formation. For example, interface silicate formation results from interaction between La precursor/Si and a self-cleaning effect of precursors on III-V will be discussed using in-situ XPS. Since ALD frequently causes abrupt interface, potential dipole and doping effects can be developed. I will discuss potential doping effects on III-V MOSFETs and in-situ electrical characterization. Finally, I will discuss potential modification of Cu surface by ozone and ethanol via in-situ FTIR experiments, which will be useful for area selective deposition.