Atomic Layer Deposition of Alumina from Trimethylaluminum and Ozone

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Atomic layer deposition (ALD) processes offer the advantage of excellent step coverage at the cost of low deposition rates. As feature sizes and gate thicknesses decrease, however, slow deposition is no longer a significant barrier to commercialization. We are modeling an ALD process for depositing Al_2O_3 from $Al(CH_3)_3$ and O_3. The transient simulations include the gas-phase ozone decomposition and detailed surface chemistry. The model allows examination of how equipment geometries, or process parameters such as pulse length variations, are likely to affect the process.