

A Study on the gas phase reaction of Zr precursor for DRAM capacitor

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With the recent increase in the degree of integration of semiconductor devices, the number of required multi-level thin film layers has increased while their widths have decreased. As a result, devices have become more complicated. To manufacture complex devices and to promote a low temperature process, metal organic chemical vapor deposition (MOCVD) and atomic layer deposition (ALD)-based methods have been applied to the semiconductor fabrication process. A variety of precursors have been used for the MOCVD/ALD process. For their successful application to the process, their thermal properties must be such that they do not allow degradation at specific temperatures and their vapor pressures must allow for smooth fluid flow to the chamber. Therefore, it is essential to produce technology that enables the monitoring of thermal properties in evaporated precursor gases and to measure the vapor pressure on a real-time basis.

Therefore, we attempted to evaluate precursor properties in the gas phase and propose a method to screen out various precursors.