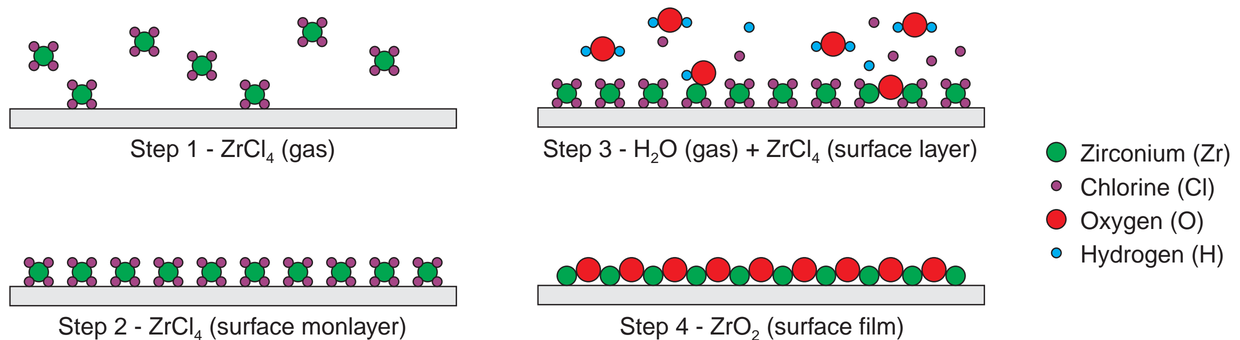
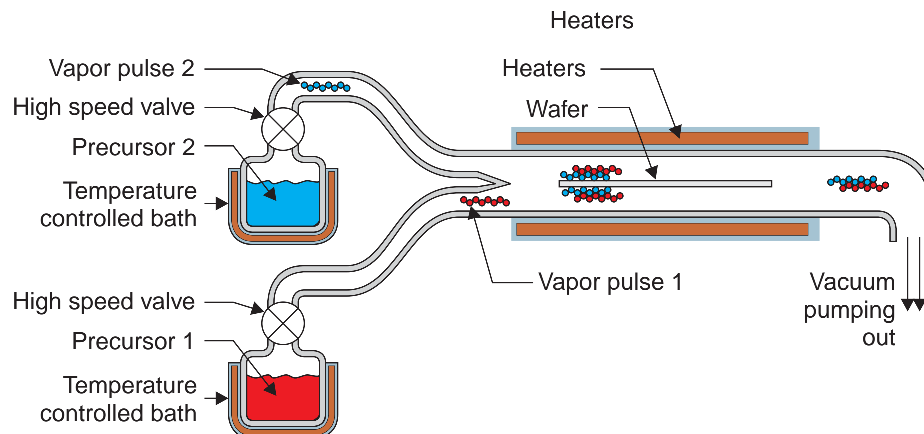
Atomic Layer Deposition (ALD)



Atomic Layer Deposition (ALD) utilizes sequential precursor gas pulses to deposit a film one layer at a time. As illustrated in the figure above, the first precursor gas is introduce into the process chamber and produces a monolayer of gas on the wafer surface. A second precursor of gas is then introduced into the chamber reacting with the first precursor to produce a monolayer of film on the wafer surface. Since each pair of gas pulses (one cycle) produces exactly one monolayer of film the thickness of the resulting film may be precisely controlled by the number of deposition cycles.



Atomic layer deposition systems include two or more source gas delivery systems with high actuation speed valves to control the length of gas pulses. The gases are introduced into a heated deposition chamber. Vacuum pumping is used to control the system pressure, gas flow and insure rapid purging of the chamber after each deposition cycle.

This information is part of our forthcoming report: 2003 IC Technology module 3. To learn more please go to: http://www.icknowledge.com/our_products/technology.html.

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Tech brief - Atomic Layer Deposition
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