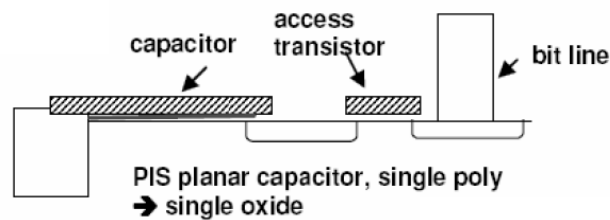


Advanced Dielectric Thin Film Deposition Techniques in Microelectronics

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The evolution of dielectric deposition techniques by means of the DRAM architecture development will be reported. The DRAM technology started 1982 with planar capacitors using a simple furnace based SiO_2 as dielectric.



In 1985, the 3-dimensional capacitor concept with SiO_2 was introduced. Later on, Si_3N_4 as new dielectric material was added. From 2001 to now, new high-k dielectric materials as Ta_2O_5 , HfO_2 and Al_2O_3 appeared. New Chemical Vapour Deposition (CVD) techniques like Atomic Layer Deposition (ALD) or Atomic Vapour Deposition (AVD) are required to achieve excellent step coverage in 3D structures.

