

Materials Innovations Driving AI

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A search engine describes AI as the ability of machines to perform tasks that typically require human intelligence. However, to semiconductor technologists, AI is composed of multiple, high performing logic/graphics processors working in parallel with hyper fast interconnections to stacked high bandwidth memory.

AI pushes processor performance and technology innovation to their limits. Device manufacturers accomplish this by reducing dimensions of the features, inserting novel architectural improvements and introducing new materials and processes. In this presentation, the evolution of processors will be highlighted, with particular emphasis on the novel materials necessitated as technologies scale. Changing one material in the process can have a cascading effect on subsequent processing steps, and the development of a yielding, manufacturable process requires a fundamental understanding of these process interactions as new materials are introduced to enable AI.