

Nanomanufacturing technology: Exa-units at nano-dollars

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The history of steel and silicon suggest that measured by number of papers, the non-IC nanotechnology industry should exceed U\$1 trillion in revenue. Meanwhile Moore's law marches on, with the increased importance of consumer devices emphasizing cost per bit rather than GHz, drives investment in the IC industry. In 2006 alone, $\sim 3 \times 10^{18}$ flash bits will be produced at average costs of \sim U\$10n per (good) bit. As a result, nanoelectronics will remain the predominant commercial embodiment of nanotechnology for the foreseeable future.

This presentation explores key technology challenges in IC nanomanufacturing and reviews some of the main industry directions that will sustain the pervasive growth of semiconductor content. Additionally, the precision, repeatability, reliability and cost effectiveness of the IC-proven nanomanufacturing technology platforms – which have already impacted wide screen TVs – will enable more new markets in the future, especially where technology-induced cost reduction leverages demand elasticity.