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Abstract for an Invited Paper  
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**Prize for Industrial Applications of Physics: Materials science, microelectronics scaling, and beyond  
the silicon transistor**  
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Conventional density and performance scaling of the silicon microprocessor will reach an end within about a decade. In anticipation of this, there has been extensive interest in examining materials and devices that will replace silicon transistors. There is also the more far reaching interest in going beyond conventional computing and exploring non-Boolean forms of logic, and the devices and materials that will go with it. I will describe some of the research at IBM in these areas, including our work in developing carbon nanotube transistors as a drop in replacement for the silicon MOSFET.