Building the future for the next era of semiconductors

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The semiconductor industry is projected to double in size by 2030 driven by AI, transportation, and communications – all of which are powered by chips. This talk will focus on our vision of what will be required of the equipment industry through the rest of the decade. On the logic and memory roadmap, the continued inflections to 3D devices are producing the most technologically complex structures at the atomic scale. The move from 2D to 3D necessitates new ways of processing – around tight corners – we thus expect more atomic layer deposition (ALD) and etching (ALE). Looking at the fabs of the future, the equipment inside will become more self-aware, self-maintained, and self-adaptive to enable uninterrupted productivity. Despite improved productivity in the fab, the time and cost to develop processes in the lab will continue to increase, driving a transformation of process engineering to embrace human-machine collaboration. As we design the systems, products, and processes for the next decade, we'll need to do so in environmentally sustainable ways to meet industry NetZero emission targets.