Abstract Submitted
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Digital Atomic Scale Fabrication[1] JOHN RANDALL, Zyvex Labs — Nanotechnology has not lived up to its promises. An analogy could be made between the state of nanotechnology today and information technology when it was still analog. The vast majority of the growth of IT is due to digital information theory which was described by Shannon long before it was realized. We need to move from analog nanofabrication which treats matter as if it is infinitely divisible to a digital approach by using the tactics of digital IT that deal with the inevitable errors through a host of error detection and error correction schemes. The current and rapidly evolving IT systems are incredibly complex and yet extremely reliable. I believe that by embracing and developing digital tactics with our nanofabrication processes, similarly impressive nanosystems that are not restricted to information processing will emerge. I will describe our atomically precise patterning technique that achieves sub-nm resolution that is a fully digital fabrication technique and how we are developing atomic scale fabrication. I will describe how we can develop digital atomic scale fabrication that will tolerate fabrication errors and produce error-free structures. I am convinced that this is the most promising path to realizing the promises of nanotechnology.

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