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### **Nanofabrication in the Magnetic Recording Industry: Past, Present and Future**

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The magnetic recording industry stands out as an example of multidisciplinary nanotechnology that keeps pushing the envelope in terms of controlling matter and events at the nanometer length scale. From magnetic media composed of sub-10 nm grains, to overcoat protecting layers that are only 2-3 nm thick, to read sensors that are  $\sim 30$  nm wide, to recording heads that fly at  $\sim 5$  nm heights with speeds up to 100 mi/hr, nanotechnology and nanofabrication have been inseparable to the success and extendibility of hard disk drives. Looking into the future, as the demand for data storage continues to increase in a data-centric, cloud-connected environment, future magnetic recording will need to scale accordingly to accommodate ever increasing demands for areal density gains. Future storage technologies such as heat assisted magnetic recording that employs plasmonic antennas or magnetic bit patterned media that requires self-assembly of block copolymers, also stake their success in the advances of nanoscience. I will review research opportunities in this industry with a personal perspective of a decade's worth in self-assembly for lithographic applications.