Opportunities in Nanomagnetism$^1$
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This talk addresses the challenges and scientific problems in the emerging area of nanomagnetism. [1] Included are fabrication strategies, and experiments that explore new spin-related behavior in metallic systems, as well as efforts to understand the observed phenomena. As a subfield of nanoscience, nanomagnetism shares many of the same basic organizing principles, such as geometric confinement, physical proximity, and chemical self-organization. These principles are illustrated by means of examples drawn from the quests for ultra-strong permanent magnets, ultra-high-density magnetic recording media, and nanobiomagnetic sensing strategies. As a final example showing the synergetic relationship to other fields of science, the manipulation of viruses to fabricate magnetic nanoparticles is presented.


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