

THE DARK PAST AND BRIGHT FUTURE OF NANO-MAGNETICS

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When magnetism was discovered 2500 years ago, no one could predict that today we would be injecting ourselves with magnetic particles for medical purposes or that we would be storing bits of information on nano-scopic magnetic islands. In fact, no one knew anything about magnetism for a long time, and the nature of magnetism remained a dark mystery for more than 2000 years. Today, magnetic materials and nanostructures are so vital for science, technology, and business, that we are never more than a few meters away from some form of advanced nano-magnetic device. In this lecture I will give a brief historical overview of how the physics of magnetism evolved and discuss some of the key discoveries that led to the wonderful energy-producing and life-saving technologies we have today. Further, we will discuss the many possibilities of how magnetic nanotechnology can help us build a bright future by improving healthcare, energy, and transportation.