Abstract

There is a resurgence of interest in magnetism on the nanometer length scale largely driven by new synthesis/characterization capabilities and potential applications in information storage and biomedical applications. Size-dependent scaling laws, exchange, proximity and interface effects and studies of spin transport are increasingly of fundamental and technological interest.

Following a personal outlook on nanotechnology and a broad overview of our research, I will present highlights of our work in dilute magnetic semiconductors and exchange-biased thin film heterostructures. The rest of the talk will focus on biomedical nanomagnetics using functionalized nanoparticles emphasizing their synthesis, morphology, surface functionalization, self-organization, inter-particle interactions, cytotoxicity and biomedical applications.

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Prof. Kannan M. Krishnan Speaker

Prof. Kannan M. Krishnan obtained his B. Tech in Mechanical Engineering from IIT, Kanpur (India) in 1978, his MS in Materials Science from SUNY, Stony Brook in 1980 and his Ph.D., under the supervision of Prof. G. Thomas, in Materials Science from UC, Berkeley in 1984. He subsequently held various scientific and teaching positions at Lawrence Berkeley National Laboratory, UC Berkeley before joining the University of Washington in 2001 where he is presently the Campbell Chair Professor of Materials Science and an Adjunct Professor of Physics. He has also held visiting appointments at Hitachi Central Research Laboratory (Japan), Tohoku University (Japan), Danish Technical University (Denmark), University of Sao Paolo (Brazil), University of Western Australia and Indian Institute of Science.