

Prof. Kannan M. Krishnan

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Education & Training

IIT, Kanpur, India	Mechanical Engineering	B.Tech	1973-1978
SUNY, Stony Brook	Materials Sciences	M.S.	1978-1980
UC, Berkeley	Materials Sciences	Ph.D.	1980-1984
UC, Berkeley/LBNL	Materials Sciences Division	Post-doctoral Fellow	1984-1986

Professional Experience

Current Positions: University of Washington, Seattle: **Professor of Materials Sciences & Engineering** (2001–); **Adjunct Professor of Physics** (2003 –).

Previous Positions: University of California: **Lawrence Berkeley National Laboratory, Materials Sciences Division:** Senior Scientist (1998-2001), Staff Scientist III (1989-98), Staff Scientist II (1986 - 89), Principal Investigator (1990-2001); **Department of Materials Science, Berkeley, Lecturer** (1994-96)

Visiting & Term Appointments (select): *University Klinikum Hamburg-Eppendorf, Germany* (August, 2016 & 2017); *University of Duisburg-Essen, Germany* (June/July, 2016 & 2017); *Indian Institute of Science, Bangalore, Brahm Prakash Visiting Chair* (January, 2016); *University of Glasgow* (October, 2015); *University of Alexandria, Egypt, Fulbright Specialist* (September, 2010); *Tohoku University* (February–May, 2009); *University of Western Australia, Professor-at-large*, (2006-8); *Danish Technical University, Institute of Micro- and Nanotechnologies* (April-May, 2005); *Tohoku University, IMRAM, JSPS Visiting Professor* (2003); *Hitachi Central Research Laboratory, Tokyo, Visiting Senior Researcher*, (1993-4); *University of Sao Paulo, Brazil, FPSP Visiting Professor*, (1991).

Start-Up Company: Founder, *LodeSpin Labs, LLC* (2010 –) a Seattle-based start-up company involved in the development of tailored MNPs for a range of biomedical applications

Honors and Awards

Alexander von Humboldt Forschungspreis (Career Research Award), Germany (2016); *Brahm Prakash Visiting Chair*, Indian Institute of Science, Bangalore, India (2016); *Member* (elected), Washington State Academy of Science (2015); *Distinguished Scientist/Engineer Award*, Functional Materials Division, The Minerals, Metals & Materials Society (TMS) (2015); *Faculty of the Year*, Junior Class of 2013-14, UW-MSE (2014); *Fellow*, Institute of Electrical and Electronics Engineers (IEEE) (2013); *Distinguished Lecturer*, Frontiers in Chemistry, Case Western Reserve University (2012); *Donald G. Fink Prize*, IEEE (2012); *Distinguished Scientist Lecture*, National Physical Laboratory, New Delhi, India (2011); *Fulbright Specialist Award*, University of Alexandria, Egypt (2010); *Faculty of the Year*, Senior Class of 2010, UW-MSE (2010); *Fellow*, American Physical Society (2009); *Distinguished Lecturer*, IEEE Magnetics Society (2009); *Rockefeller Fellowship Bellagio Residency* (2008); *Professor-at-Large*, University of Western Australia, Perth (2006–8); *Fellow*, American Association for the Advancement of Science (2005); *Outstanding Educator Award*, College of Engineering, UW, Seattle (2004); *John Simon Guggenheim Foundation Fellow* (2004); *Invitational Senior Fellowship* Japan Society for the Promotion of Science, (2003); *Fellow*, Institute of Physics, London (2003); *Campbell Chair Professor* of Materials Science, University of Washington (2001-6); *Exceptional Teaching Award*, UC Berkeley Materials Research Society (1996); *HIVIPS Senior Scientist Fellowship*, Hitachi Central Research Laboratory, Japan (1993-4); *Eli Franklin Burton Medal*, Microscopy Society of America (1992); *FPSP Visiting Professorship*, Dept. of Physics, University of Sao Paulo, Brazil (1991)

Synergistic Activities (select)

Member, Fellows Evaluation Committee (2014–) & Technical Committee (2017–), IEEE Magnetics Society; *Member*, Fetzer Institute Task Committee on Engineering for Society (2011 –4); *Member*, Editorial Board, *Journal of Magnetism and Magnetic Materials* (2014-2019); *Member*, Organizing Committee, International Workshops on Magnetic Particle Imaging (2012 –); *Member*, Administrative Committee, IEEE Magnetics Society (2011-3); *Associate Editor*, *Med. Phys.* (2013 –); *Member*, UW

Common Book Selection Committee (2010); **Member** of the Editorial Board, *IEEE Magnetics Letters*, (2010-3); **Member**, International Advisory Board, Korean Magnetic Society (2009 –); **Member**, International Review Commission, Tohoku University, Japan (2009); **Member**, Department of Energy Study Committee on Advances in Nanomagnetism via X-ray Techniques (2005-6); **Member**, International Expert Panel, Canada Fund for Innovation Competition for major Materials Science Initiatives (2006); **Member**, Promotion and Tenure Council, College of Engineering, UW (2000-5); **Member**, International Advisory Committee, Osaka University, Center for UHVEM (1995-2001); **Member** of the Editorial Board, *Jour. Phys. D:Appl. Phys.* (1999-2004); **Member**, Steering Committee, National Center for Electron Microscopy, Berkeley, CA (1991-2001).

Current Research Interests

- (i) **Materials Science & Engineering and Condensed Matter Physics** with emphasis on nanoscale magnetic and transport (both charge and spin) phenomena in reduced dimensions, including their inter-coupling, to develop new paradigms for materials and devices in the context of novel information (storage, processing and logic) and energy technologies.
- (ii) **Bioengineering** at the intersection of Magnetism, Materials and Medicine focusing on diagnostics, imaging and therapy, with appropriate translational research and commercialization activities.

Book(s)

Kannan M. Krishnan, “*Fundamentals and applications of magnetic materials*”, 816 pages, Oxford University Press (2016) — see recent reviews in *MRS Bulletin*, p540, July 2017; *Contem. Phys.* **58**, 188-189 (2017); and *Physik Journal*, **16**, 56 (2017)

Publications (10 most cited, out of 230, in Web of Science)

1. V. F. Puentes, **Kannan M. Krishnan** and P.A. Alivisatos, “Colloidal Nanocrystal Size and Shape Control: the Case of Co”, *Science*, **291**, 2115 (2001).
2. **Kannan M. Krishnan**, “Biomedical nanomagnetism: a spin through new possibilities in imaging, diagnostics and therapy”, *IEEE Trans. Mag. Adv. in Mag.* **46**, 2523-2558 (2010)
3. K.A.Griffin, A.B.Pakhomov, C.M.Wang, S.M.Heald, **Kannan M.Krishnan**, “Intrinsic Ferromagnetism in Co-Doped Anatase TiO₂ thin films”, *Phys. Rev. Lett.*, **94**, 157204 (2005)
4. V. F. Puentes, **Kannan M. Krishnan** and P. Alivisatos, “Synthesis, self-assembly and magnetic behavior of a two-dimensional superlattice of single-crystal e-Co nanoparticles” *Appl. Phys. Lett.*, **78**, 2187-2189 (2001)
5. N. -H. Cho, **Kannan M. Krishnan** , D. K. Viers, M. D. Rubin, C. B. Hopper, B. Bushan and D. B. Bogy, "Chemical structure and physical properties of diamond-like carbon films prepared by magnetron sputtering", *J. Mater. Res.* **5**, 2543-2554 (1990).
6. A. Tuan, et al; "Epitaxial Growth and Properties of Cobalt-doped ZnO on a-Al₂O₃ Single Crystal Substrates." *Phys. Rev. B* **70**, 054424 (2004)
7. M. Gonzales, M. Zeisberger and **Kannan M. Krishnan**, “Size-dependant heating rates of iron oxide nanoparticles for magnetic fluid hyperthermia”, *J. Mag. Mag. Mat.*, **321**, 1947-1950 (2009)
8. H. L. Ju, H.C. Sohn and **Kannan M. Krishnan**, “Evidence for O-2p hole driven conductivity in La_{1-x}Sr_xMnO₃ and La_{0.8}Sr_{0.2}MnO₂ CMR thin films”, *Phys. Rev. Lett.*, **79**, 3230 (1997)
9. R. Narain, M. Gonzales, P. Stayton and **Kannan M. Krishnan**, “Facile Synthesis of Biotinylated p(NIPAM)-Coated Iron Oxide nanoparticles and their Bioconjugation to Streptavidin”, *Langmuir*, **23**, 6299-6304 (2007).
10. Marcela Gonzales and **Kannan M. Krishnan**, “Synthesis of Magnetoliposomes with Monodisperse Iron Oxide Nanocrystal Cores for Hyperthermia”, *J. Mag. and Mag. Mater.*, **293**, 265-270 (2005)

Patents (select)

1. A. P. Khandhar, **Kannan M. Krishnan**, R.M. Ferguson and S. J. Kemp, “Coated magnetic nanoparticles”. (U.S. Patent #9,555,136, January 31, 2017).
2. **Kannan M. Krishnan**, R. M. Ferguson and A.P. Khandhar, “Tuned multifunctional magnetic nanoparticles for biomedicine”. (US Patent #9,259,492; Feb 16, 2016)
3. **Kannan M. Krishnan**, “Ferromagnetic Thin Films”, (US Patent #5,374,472; Dec 20,1994)