Dr. Jagadeesh S. Moodera received his Ph.D in Physics from Indian Institute of Technology (Madras). He joined MIT in 1981 as a research staff at the Francis Bitter National Magnet Laboratory (FBML), where he currently leads the ñThin Film Magnetism, Superconductivity and Nanospintronicsò group. He is a visiting professor at Technological Univ. of Eindhoven (The Netherlands), an adjunct professor at Suffolk University, Distinguished Foreign Scientist at National Physical Laboratory (India) and a Distinguished Professor at IIT (Chennai, India). Dr. Moodera is a Fellow of American Physical Society and has received several national and international awards including Oliver Buckley Prize in Condensed Matter Physics from APS (2009).

Dr. Mooderaôs many years of research in the area of spin polarized tunneling led to the breakthrough in observing tunnel magnetoresistance (TMR) at room temperature in magnetic tunnel junctions (1995). This resulted in a huge surge in this area of research, currently one of the most active areas. TMR effect is used in all ultra-high density magnetic data storage since about 2004, as well as for the development of non-volatile magnetic random access memory (MRAM).

Research Interest:

Experimental condensed matter physics - fundamental and applied research that includes nanospintronics, spin polarized transport and tunneling, thin film magnetism, superconductivity and topological insulators.

Current research topics:

- Spin filter tunneling and internal exchange field effects.
- Topological insulators ï Growth of ultra thin films and spin transport studies (collab. with Profs. P. Jarillo-Herrero and N. Getty).
- In search of Majorana Fermions (Collab with Prof. P. Lee).
- Organic spintronics.

- Spin filtering and transport into graphene (collab with CNRS/Thales/U of Paris, France and EPFL, Switzerland).
- Spin filtering phenomenon in oxides (collab. with CEA, Saclay, France).
- Spin polarized transport/tunneling studies in nanostructures of metals and semiconductors. (Collab. with Korea Institute of Science and Technology, Seoul, Korea)

Selected Publication

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- ñFrontiers in Spin Polarized Tunnelingò, J. S. Moodera, G-X. Miao and T. S. Santos, Physics Today p46 (April 2010)
- òSpin Polarized Transport in Organic Semiconductorsò, J. S. Moodera, T. S. Santos and K. V. Raman, A Chapter in ñOrganic Spintronicsò Ed. By Z. V. Vardeny, CRC Press, Taylor and Francis Group Publishers (2010) p1-28
- ñAll magnesium diboride Josephson junctions with MgO and native oxide barriersò, M. V. Costache and J. S. Moodera, Appl. Phys. Lett. **96**, 082508 (2010)
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- ñInfinite Magnetoresistance from the Spin Dependent Proximity Effect in Symmetry Driven bcc-Fe/V/Fe Heteroepitaxial Superconducting Spin Valvesò, Guo-Xing Miao, Ana V. Ramos, and Jagadeesh S. Moodera, *Phys. Rev. Lett.,* **101**, 137001 (2008).
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- ñThe phenomena of spin filter tunnelingò, J. S. Moodera, Tiffany S. Santos and Taro Nagahama, J. Phys.: Condens. Matter 19, 165202 (2007) ï A review
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