Name: Dr Radha Srinivasan

Qualifications: M.Sc.(Physics) University of Mumbai -1987

Ph.D. (Physics) University of Mumbai – TIFR Graduate School – 1994

Teaching Experience: 25 years (since 1995)

Area of Interest: Magnetism and magnetic materials, Magnetic measurement systems: magnetoresistance, magnetostriction, magneto-optic effect; Magnetic Nanomaterials for biomedical applications

Equipment and set-up:

i) Low cost PC based hysteresis loop tracer for BH measurements

ii) Cryostat for conductivity measurement (acquired from TIFR)

iii) Fe57 Mossbauer Spectrometer (acquired from TIFR)

iv) Magnetoresistance set up in 1 Tesla Electromagnet

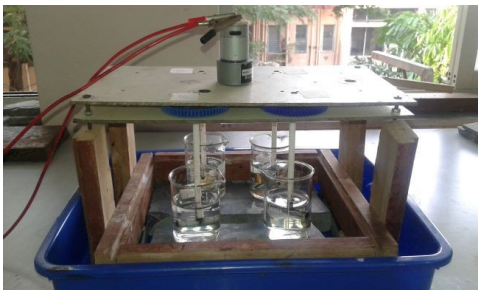
v) Assembled Muffle Furnace (up to 1000 C) for oxide samples

vi) Modified domestic microwave oven for ceramic samples

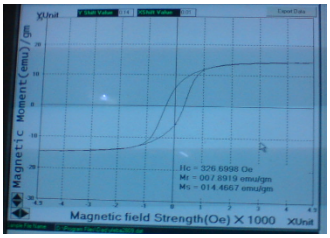
vii) Magneto-optic effect: Laser transmission in moderate fields

viii) Assembled multi-spindle stirrer for nanomaterial synthesis

ix) Equipment for M.Sc. Lab from Science Academies' Experimental Physics Kit

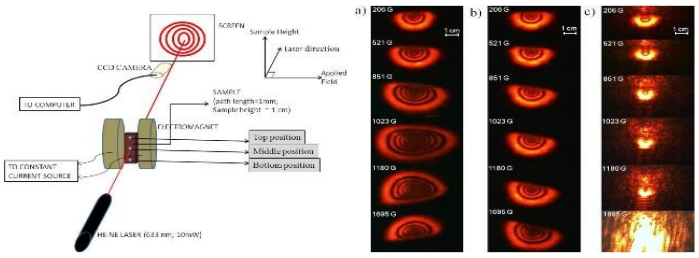


In-house built stirrer

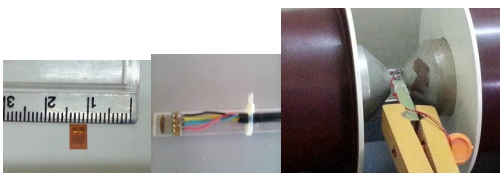


PC based pulsed hysteresis loop tracer

Chemical synthesis of nanomaterials



Magneto-optic studies in ferrofluids

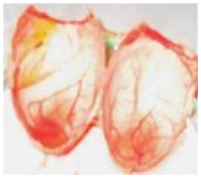


Magnetostriction and Magnetoresistance probe between poles of electromagnet

Report on Research Activities of the Group of Dr Radha Srinivasan

The activities of the group of Dr Radha and the MPhil, PhD and M.Sc. students comprise mainly of Functional Magnetic Materials. The thrust is also on Nanomaterials for biomedical and sensor applications. The techniques used primarily are synthesis of samples by Solid State Reaction and Wet Chemical procedures and the characterization of the Resistive, Dielectric and Magnetic Properties. The synthesis is carried out in the laboratories in the Department of Physics and also in some of the affiliated colleges and the Mumbai Centre of UGC Consortium for Scientific Research for DAE Facilities within the BARC Campus.

The significant outcome has been the synthesis of magnetic ferrite nanoparticles for biomedical applications as pro-angiogenic agent (tested on chick embryo) and MRI contrast agent (tested on lymphocytes). This work was carried out by a full-time PhD student who received the Maulana Azad Minority Fellowship of the UGC during 2013-16.

The other important work has been in ferrofluids showing interesting magneto-optic effects under the effect of high power Laser beam in varying magnetic fields. This work has received awards in presentations and has been published in international peer reviewed journals. Some of these studies show potential to develop optofluidic devices.

The collaborative Research work with the UGC-CSR DAEF, Mumbai Centre is in the area of Multiferroics and the students are making significant progress in their interaction with scientists at the Centre and some good publications are emerging from this collaboration.

In co-ordinating the Astronomy and Space Physics Programme in 2009-10, a group of M.Sc. students under the guidance of Department faculty and support from the UM-DAE CBS of the University of Mumbai, carried out studies on the Total Solar Eclipse of January 2010 at Rameshwaram, Tamil Nadu. This work was published in a high impact factor journal and has paved way for further work in related areas.