

National Research Council (CNR)

<http://www.ism.cnr.it>

General

National Research Council (CNR) is the largest public research Institution of Italy, including 8400 employees, among which about 6000 researchers. The Institute for Structure of Matter (ISM), consisting of 80 people, is involved in the engineering and fabrication at atomic and nanometer scale of novel functional materials to be used for advanced electronic devices, to

their structural and microstructural characterization and to the study of their magnetic, transport and optical properties. The Nanostructured Magnetic Materials group, participating in NANOMAG, involves presently 7 researchers of the Institute. The expertise of the ISM team is in the preparation of nanostructured magnetic materials as nanoparticles by Sol-Gel chemistry and as thin films/multilayers by Pulsed Laser Deposition, in their structural/microstructural characterization and in the investigation of magnetic properties. The group has an international reputation for its contribution to the study of magnetic properties of nanoparticles and a long experience in European funded projects (15 projects). The HIDEMAR project (Coordinator Dino Fiorani, Director of the Institute) on high density recording media has received one of the DESCARTES prize 2005 for the Excellence in collaborative research in Europe. The group has organized many major international conferences such as International Conference on Magnetism, ICM 2003; International Conference on Fine Particle Magnetism, ICFPM 2007, International Conference on Nanostructured Materials NANO 2010. D. Fiorani is the President of the Italian Magnetism Society. ISM is a partner of the Italo-Argentine Joint laboratory on Nanomagnetism "LIANAM".

Infrastructure:

State of the art facilities both for materials preparation as particles by solution and solid state chemistry and as thin films by MBE, PLD and Langmuir-Blodgett. and for materials characterization, two beam lines at the Italian Synchrotron Radiation Source (for XMCD and AR-XPS), XRD, XRR, STM, AFM, SNOM, XPS, SQUID and a Vectorial VSM, computing facilities for theoretical modeling.

The role of the CNR team in the consortium will be to train people in the use of the above characterization and growth techniques (prominently PLD and HPPM fabrication, magnetic characterization and computational modeling) and to exchange expertise and contribute to the (i) synthesis and characterization of manganites and iron oxide based bulk, nanoparticles, thin films and molecular based magnets and (ii) fabrication/consolidation and characterization of nanocomposite magnets.

Key scientists

Dr. E. Agostinelli (Head of CNR group, 5 WP Leader) Structural/Magnetic properties, Dr. D. Fiorani Magnetic Properties, Dr. A. Capobianchi hard nanoparticle preparation, Dr. E. Bauer

soft nanoparticle preparation, Dr. A. M. Testa Magnetic properties and modelling, Mr. Gaspare Varvaro Magnetic properties- VSM, Ms. Sara Laureti, Magnetic properties-SQUID, 2PhD students.