



Special Issue of ICMAGMA 2018 on Topics Magnetic Nanoparticles and Thin Films

Subhankar Bedanta¹ · J. Arout Chelvane² · P. Saravanan² · Braj Bhusan Singh¹ · Ajaya K. Nayak¹ · Wolfgang Kleemann³

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Magnetic materials have a great impact in our daily life. A wide variety of magnetic materials have been used in different forms for societal benefits. The research on magnetism formally began about only a century ago. However, significant progress has been made starting with fundamental research to different applications. Among various sub-topics of magnetism, the research on magnetic nanoparticles has drawn special attention in the last few decades because of many interesting properties. A part of the community focuses on synthesis of magnetic nanoparticles (MNPs). With time, it was possible to synthesize MNPs of various materials, alloys and oxides, down to a few nanometers. It is known that, when the diameter falls below a certain critical value, then there is no formation of domain walls inside the particle and all the magnetic spins behave in unison. These particles are called single-domain magnetic nanoparticles. The latter topic has drawn attention for their potential applicability in many areas, starting from data storage to bio-medical applications, e.g., hyperthermia. Another approach is to study both static and dynamic magnetic properties of the magnetic nanostructures such as vortex dynamics. These nanostructures have different application potentials. Further, a large research community is working exclusively on magnetic thin films, which provide not only an ideal platform for exploring fundamental and novel physics

but also a source for plethora of application potentials. In recent years, topological states have also drawn significant interest as it brings exciting phenomena.

We are very happy that the special issue of International Conference of Magnetic Materials and Applications 2018 (ICMAGMA-2018) published in *J. Superconductivity and Novel Magnetism (JOSC)* includes a set of comprehensive articles focused on magnetic nanoparticles. These papers were presented in the ICMAGMA 2018 during December 9–13, 2018, which was jointly organized by National Institute of Science Education and Research (NISER), Bhubaneswar, India, and Magnetism Society of India (MSI), Hyderabad. About 450 participants from 22 countries have attended. The conference program comprised of about 80 invited lectures, several contributed oral presentations and 200 poster presentations. The conference covered several topics under magnetism and magnetic materials. However, for this special issue of JOSC, the topics of magnetic nanoparticles and thin films were selected. The papers published in this special issue were peer-reviewed as per the standards set by JOSC. We hope that the articles in this issue will stimulate future work on magnetic nanoparticles and thin films.

✉ Subhankar Bedanta
sbedanta@niser.ac.in

¹ NISER, HBNI, At/Po- Jatani, 752050 Bhubaneswar, India

² Defence Metallurgical Research Laboratory,
500058 Hyderabad, India

³ University Duisburg-Essen, 47048 Duisburg, Germany