



The first issue of the year 2013 brings in reviews on “Microscopy and imaging” guest edited by Dr. Gopal Hegde at the Centre of Nano Science and Engineering from our Institute. Obviously, Microscopy occupies a key position in the characterization of nano materials and imaging is a close surrogate of this technique. Dr. Gopal has meticulously brought in the wide spectrum of subjects ranging from structures of microorganisms to satellite imagery and the contributions are from a variety of groups from India and abroad. The overall flavor of this collection of articles, I believe, will permeate surely to both the student community and the experts in these areas and would serve as extensive reference material.

I must acknowledge the work of our editorial staff to ensure that this issue is brought on time. My sincere thanks to all the contributors and to Dr. Gopal Hegde who has worked overtime to get this issue in proper order. Our next issue will be devoted to “Water management in changing environment” keeping in view the UN declaration of 2013 as the Year of Water Cooperation.

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Special Issue on Imaging and Microscopy

Recording images using microscope dates back to the earliest days of microscopy. The first single lens instruments, developed by Dutch scientists Antoni van Leeuwenhoek and Jan Swammerdam in the late 1600s, were used by these pioneering investigators to produce highly informative drawings of blood, microorganisms, and other minute specimens. British scientist Robert Hooke has developed one of the first compound microscopes recorded his observations in “*Micrographia*”, and published his landmark volume on microscopy and imaging in 1665. Over the next three hundred years, optical microscopy has revolutionized scientific research cutting across all fields of basic science and engineering. Improvements are continuously being made over the years, including corrections for chromatic and spherical aberrations, though the magnification of optical microscopes was fundamentally limited by the wavelength of light. Parallely, other extended optical imaging and microscopy techniques such as ultraviolet microscopy, infrared microscopy, digital holographic microscopy, laser, confocal and fluorescence microscopies were developed in later years. Today imaging and microscopy have moved beyond optical techniques, and the outcomes are AFM, SEM, TEM, FIB and so on. With these developments now it is possible to produce visible images of structures at nano and pico scales (molecules, elemental proportions) with sub-nm resolution and is possible to image things on earth from space through satellites with meter resolution, also high quality imaging of other planets.

In view of the exciting developments in imaging and microscopy in recent years, we planned this issue containing reviews in a broader sense (covering the imaging of micro-organisms/structures to satellite imagery) written by experts in their respective fields. In this issue, we have highlighted the recent advances in imaging and microscopy covering IR imaging, holographic imaging and microscopy, AFM, fluorescence and confocal microscopy, high speed flow imaging, satellite imagery, wavefront imaging and optical-coherence tomographic imaging. However we have not included the articles on SEM, TEM and FIB as these techniques have been evolved into advanced fields of research with wide spread applications, and hope to bring out a separate issue covering these fields of cutting edge research.

I would like to thank Chief Editor Prof. T.N. Guru Row and the editorial committee of the journal for providing me this opportunity as guest editor for this special issue. I am grateful to all the authors for contributing to this special issue inspite of their busy schedule and our short notice. I would like to express my gratitude to Mrs. Kavitha Harish, Mr. Anoop P. Simha and Mr. Panduranga for their help, and I would also like to thank CeNSE for continuous support. Finally, I thank all the reviewers, copy editors and proof readers for their timely contributions towards bringing out this issue on time.



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