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PREFACE

Optics and Photonics, as we understand today, is a synergetic combination of the age old principles of optics and the science of generating, controlling, and detecting photons. The relevance of this area in modern day technology is beyond any iota of doubt. The easy availability of high power coherent sources and matching detectors, reducing dimensions and increasing sensitivity of CCD arrays, amplitude and phase spatial light modulators, high quality optical components, a diverse range of optical fibre waveguides, electro-optic and accousto-optic modulators, novel illumination schemes using LED arrays and fibre optic bundles - the list is endless - have opened up new horizons of research and dissemination of knowledge in this ever growing field. Myriad applications have become prominent in everyday life. From telecommunications to medical imaging and cancer research, optics and photonics are the main pillars of today's critical technologies. Dominant factors that contributed to this are the discovery and development of different forms of lasers, a wealth of new technologies such as non-linear optics, atom trapping and cooling, pico-second and femto-second dynamics and electro optics. Not only physics but also chemistry, biological sciences as well as engineering have profited immensely by use of laser-based methods. A wonderful range of new applications such as holography, optical communications, pico and femto second coherent probes, medical imaging, adaptive optics and optical coherent tomography, to name a few, have revolutionized science and technology. Needless to say that the revolution in semiconductor industry would not have been possible without the optics involved in the photolithographic process. Employing novel imaging techniques, the achievable resolution has now surpassed the diffraction limit.

The interdisciplinary nature of the subject necessitates productive cross-interaction between the diverse branches and sub-branches, as also to develop an awareness of the trends and projections of this fascinating field. It is largely with this objective that the 2nd International Conference on Trends in Optics and Photonics (IConTOP 2011), has been organized during December 7 – 9, 2011, aimed towards providing a common forum conducive to formal and informal scientific interaction and exchange.

Over 105 research papers including 20 invited papers authored by eminent scientists, technologists and research workers are included in the proceedings. The areas covered are:

– Imaging Technology
– Optical Metrology
– Optical Data Storage & Display Devices
– Diffractive Optics
– Optical System Design
– Optical Interferometry, Holography & Laser Speckles
– Laser Systems and Applications
– Guided Wave, Nonlinear & Quantum Optics
– Non-Linear Optics and Related Devices

– Photonic Components & Devices
– Integrated Optics & Devices
– Optical Networks and Components
– Fiber Optic Sensors and Instrumentation
– Biophotonics
– Nano-Photonics & Plasmonics
– Optical Techniques for Materials Characterization
– Optical Computing

We are indebted to the members of the international advisory committee who took serious interest in the Conference and have contributed significantly to this publication. The tremendous efforts of the reviewers are also gratefully acknowledged.

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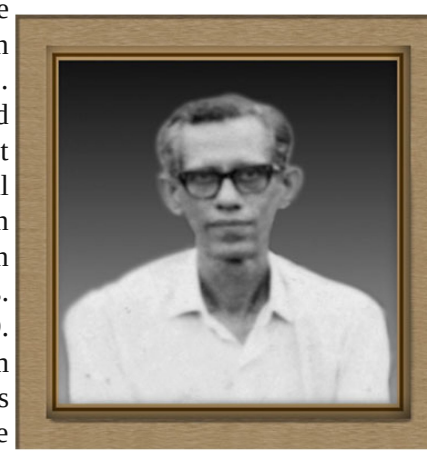
Professor Manoranjan De (1923–2011)



Prof. Manoranjan De (b.1923), the pioneer in the field of Applied Optics in India passed away on April 13, 2011. After completing his Masters in Applied Physics in the late forties of the last century, he worked as an electrical engineer for a brief period and then joined the faculty of Applied Physics in Calcutta University in early fifties. Thereafter he obtained D.I.C. and Ph.D. under Late Prof. Harold H. Hopkins from the Imperial College, London. On his return to India in the mid-fifties he introduced the teaching of Applied Optics at the University of Calcutta. Prof. De nurtured this course like his own child, continually modifying, keeping in tune with the tremendous developments in the field of optics, till his retirement. His efforts culminated in the establishment of the Department of Applied Optics and Photonics in the University of Calcutta in 2005.

During 1953–1983 he visited several renowned research centers of applied optics in different parts of the world, including Laval University, Quebec, Canada, IBM Research Laboratoy, USA, CSIRO, Australia, and Reading University, U.K. Prof. De had extensive collaborations with scientists of National Physical Laboratory, Delhi and the optics faculty of Physics Department of IIT Delhi. He used to have close liaison with the founding fathers of the International commission for Optics, notably H. H. Hopkins, A. W. Lohmann, A. Maréchal, M. Francon, W. Steel and A. Boivin among others.

Professor De was the Head of the Department of Applied Physics, University of Calcutta during 1972–1979 and a member of the Governing Council of the University of Calcutta during 1978–80. He guided many students in their research and has several research articles in international archival journals in the areas of Theory of Image Formation, Partial

Coherence, Image Assessment, Interferometry, Holography, Optical Data Processing and Lens Design. His research on optical transfer function is cited in the celebrated “Principles of Optics” by Max Born and Emil Wolf. He was on the Editorial Board of the international journal Optica Acta (currently renamed ‘Journal of Modern Optics’). He undertook several R&D and industrial consultancy projects funded by different agencies. He was instrumental in the formation and development of M/s Precision Optics and Machineries Pvt. Ltd., Calcutta, which earned repute during the short period of its existence by providing custom built quality optics produced indigenously in India. After his retirement in 1983 he acted as an Adviser in the Central Scientific Instruments Organisation, Chandigarh, and continued till 1989.

Prof. De founded the Optical Society of India in 1965 in collaboration with other Indian optical physicists of the time, notably late C. S. Rao of Dehradun. He served the society in different capacities: General Secretary (1967–1974), President (1978–1980), Editor of the Bulletin of the Optical Society of India (1967–1971), and Editor of Journal of Optics (1974–1986).

With passing away of Professor De many of us have lost our mentor, and the Optical Society of India has lost its founding father. May his soul rest in peace.

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