



## OSI President's Message at the XXXVII OSI Annual Symposium

*Optics, the science of light, although studied from ancient times, was propelled into the era of Photonics by the birth of the laser in 1960. Owing to this revolution, Optics and Photonics, often defined as the "generation, emission, transmission, modulation, signal processing, switching, amplification, and detection of light", are now almost synonymous as a scientific field of study. As Tom Baer, past-President of The Optical Society OSA, very aptly described in an article in the Optical Society of America's OPN (Optics and Photonics News) at the conclusion of LaserFest, the year-long (2010) worldwide celebrations for commemorating 50 years since the laser's discovery – "In less than 50 ms, 50 years ago a simple but elegant device made from off-the-shelf components changed the world. A button was pushed, discharging a capacitor; then a flash lamp fired and chromium atoms absorbed visible light; finally Ruby red photons bounced off silver end mirrors, and a single red spot flashed for an instant on the wall, revealing hitherto unexplored properties of light. This demonstration by Theodore Maiman and colleagues at the Hughes Research Labs presented exhilarating challenges and tremendous possibilities to those in the field of optics". Lasers are so ubiquitous that it is hard to imagine today's world without the plethora of devices and applications that rely on them as their core technology, such as bar code scanners, DVDs, the Internet, printers, credit card holograms, materials processing, telecommunications..... and the list goes on (and grows on!). They are available in wide spectrum of powers (microwatts to megawatts) and pulse widths. Femtosecond pulse generation is a mature and well-established technology today; the shortest pulse width achieved last year at CREOL at the Central University of Florida was 67 attoseconds, i.e.  $10^{-18}$ th of a second, which is less than an optical cycle! Femtosecond lasers, in combination with specialty optical fibers like microstructured fibers, have led to the emergence of novel, engineerable light sources in the area of biomedical imaging via the generation of broadband, spatially coherent 'super continuum light'. Lasers have ushered in a revolution in fields as diverse as telecommunications, by enabling record terabit data rates, and in medicine, by providing a new class of surgical tools for performing eye surgeries with unprecedented precision. Lasers have the capability to transmit, store and read high volumes of data, and enable the fabrication of*

*high speed microprocessors in modern computers – capabilities that underpins all you young and not-so-young researchers, who have gathered here for the OSI annual symposium. Lasers have also provided us with unique tools for explorations in basic science. As the present OSA President, Tony Heinz says, "...laboratories around the world create and modify new quantum states of cold matter using lasers," a topic which is no longer considered speculative! The December 2012 issue of OPN enumerates the biggest trends in Optics in 2012, which spans areas such as EUV microlithography for enhanced computing powers, powerful X-ray lasers that have been used by researchers at Stanford University, USA to create and probe extremely dense plasma like that found in stars, the development of superconducting single-photon detectors, and the use of optics and photonics in space missions like NASA's Mars Rover, as also high-efficiency sources and detectors for applications in quantum metrology and information science.*

*I am delighted and excited to see that a new session (OPE) has been planned at this year's symposium for stimulating discussions and discourses on optics education. Last year, the OSI also initiated a Traveling Lecturer program under its newly-minted OSI Foundation, which was launched successfully in Odissa through the voluntary efforts of a few alumni of IIT Delhi. The OSI Foundation will require donations and endowments from OSI members and philanthropists to sustain its goals to propagate studies in Optics and expose the general society to the beauty and attributes of optics and photonics. I am sure these efforts would go a long way in cultivating a thriving research culture and stimulus amongst the younger generation to pursue Optics as a career.*

*Members of the Executive Committee of OSI congratulate and thank the Physics faculty, students and staff of Pondicherry University for having volunteered to host the XXXVII OSI Annual Symposium at their campus in Puducherry. We wish every success for an academically stimulating and eventful 3 days of the symposium at Puducherry.*

*Prof. Bishnu Pal, IITD*

*President, OSI*