REPORT OF THE LECTURE WORKSHOP
Sponsored by Science Academies of India
(4th and 5th March 2016)

Under the auspices of SPACE & SPUTNICK, PG & Research Department of Chemistry organised two day lecture workshop on 4th & 5th March 2017, entitled “Recent Trends in Chemistry”. Dr. M. Jayanthi, Principal, Seethalakshmi Ramaswami College, Trichy-620002, delivered keynote address. Dr. R. Selvameena, Vice-Principal & Head of the Department of Chemistry spoke about the department. Dr. M. Vasuki, Associate Professor of Chemistry welcomed the gathering. Dr. S. Santhi, Associate Professor of Chemistry delivered the vote of thanks.

Prof. S. Chandrasekaran, Department of Organic Chemistry, Indian Institute of Science, Bangalore spoke on the topic, “Click reactions in organic synthesis”. He explained about the definition of click chemistry. Click reaction in water, copper and Ruthenium (Cu & Ru) catalysed Azide and Alkyne 1,3-cycloaddition to produce 1,4-diol and 1,5-diol. Thermal and Cu(I) catalysed 1,3-dipolar cycloaddition and its catalytic mechanism, Regio selectivity of oxizane and Aziridines openings. Amine reactivity with cyclohexadiene diepoxides and Dendrimer synthesis. He also discussed about the regio selective reaction by Cu addition and by alkyne activation, how click chemistry used in biology and solid phase organic synthesis and applications of click chemistry in macromolecules and in the synthesis of peptide conjugates.

Prof. S. Natarajan, solid state and structure chemistry unit, Indian Institute of Science, Bangalore gave a lecture on the topic, “New Acids in the Synthesis of new compounds” and “Inorganic pigments”. He explained about the concepts of acids and bases, inorganic polymers, reaction between K2C2O4 and CdCl2 at different atmospheric conditions, importance of boric acid, silicates and S–S bonding in thiosulphate and HSAB concept using pH study. He also discussed about, the wavelength of VIBGYOR colours which are due to different electronic transitions, synthetic dyes, classification of dyes, colour of metal oxides and coordination complexes and hydroxy appetite.
Dr. V. Subramanian, Senior Principal Scientists, Chemical Laboratory, Central Leather Research Institute, Chennai, spoke on the topic, “Prediction of Spectroscopic Properties of Small Molecules using Computational Chemistry Tools” and “Computational Evaluation of Donor-Bridge-Acceptor (D-B-A) Motifs for High Performance Opto-Electronic Device Application”. He explained well about the Schrodinger equation, Born-Oppenhiemer approximation, potential energy surfaces, how molecular property like energy, electronic dipole moment etc., can be predicted using computational method, vibration spectroscopy, DFT calculation of H2O and CH4, vibrational energy levels. He also discussed about the external electric field, internal magnetic moment for calculating nuclear shielding constant and mixed derivative for calculation of Raman intensity.

Prof. Ashok Kumar Mishra, Department of Chemistry, Indian Institute of Technology Madras, Chennai spoke on the topic, “Basics of Fluorescence” and “Fluorescence – Interesting Developments from our Laboratory”. He explained well about the origin of fluorescence, basics of photochemistry, photoseliction of molecule, transition dipole moment, Jablonski diagram, fluorescence. Photophysical parameter used for probing, sensing and imaging, stimulated emission depletion microscopy and application of fluorescence technique are also described. He also discussed about the application in understanding materials and organised systems with some examples. Different phases of bilayer, reason for observed spectral changes in bile salt solutions, synthesis and property of GTHCC, supergel, how emission of white light occurred from vegetable extracts and applications of sensors in biomedical field.

Prof. R. Ramarajan, School of Chemistry, Madurai Kamaraj University, Madurai, spoke on the topic “Nanoscience, Nanomaterials and their applications” and “Photo electrochemistry and Solar Energy Conversion”. He explained about the definition of nanoscience and nanomaterials necessity of nanoscience. Application of Gold and silver nanomaterials, use of nanomaterials as an antiseptic agent are detailed. He also explained how the
level of nitric oxide in brain can be measured through nanotechnology and discussed about the fuel cells, battery mechanism of artificial photosynthesis, fuel forming reactions, catalytic application of TiO$_2$, semiconductor nanomaterials and solar energy conversion and application of nanoparticles in molars.