

## SPECIAL ISSUE



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## From the President's Desk



I would like to extend my warm greetings to all the members of the CRSI fraternity. I begin this letter with the happiest news that Professor C. N. R. Rao, our beloved Founder-President, has been awarded the highest civilian honour, BHARAT RATNA, by the Government of India. It is a great moment for all of us in the CRSI family. The entire scientific community is delighted

to hear of this distinguished and most prestigious honour to Professor Rao. On behalf of all the members of CRSI, I would like to pass on our heartiest congratulations to him.

We began the year with very successful 15th CRSI National Symposium in Chemistry (NSC-15) during Jan 31-February 3, 2013 at the Banaras Hindu University, Varanasi with more than 800 participants. The convener, Professor D. S. Pandey and his colleagues at BHU had made excellent arrangements. We had a number of award lectures, medal lectures, special mini-symposium and a session devoted to Chemistry Education involving teachers & students. It is my pleasure to thank our colleagues at BHU for the wonderful organization of the symposium.

Based on the recommendations of the Council, a committee (with Prof. V. Krishnan as convener) was formed to enlarge the chemical education program of CRSI. The Committee has made many useful recommendations and we hope to implement them in the near future.

The mid-year meeting of CRSI was held during July 12-13, 2013 at the National Institute of Technology Karnataka (NITK), Surathkal and this provided an opportunity for many chemists from this region to participate in the activities of CRSI.

Our international cooperation with the Royal Society of Chemistry and Asian Chemical Editorial Society continues to strengthen every year. CRSI participated in the Asian Chemical Editorial Society (ACES) meetings in 2012 at Wiley-VCH offices in Weinheim and in Singapore in August 2013. Chemistry-An Asian Journal started in 2006 by ACES has become a leading research journal with an impact factor of 4.57. Last year CRSI gave its support to start another journal- Asian Journal of Organic Chemistry - through ACES.

The American Chemical Society has shown interest to interact with CRSI and we jointly organized an Indo-US Symposium on Molecular Materials, which was held at the Indian Institute of Science, Bangalore, during July 15-17, 2013.

Presently, we have 14 local/regional chapters of CRSI and all of them have been very active in promoting chemical research and chemical education. Many of the local chapters celebrated National Chemistry Week in the month of August by organizing several outreach activities, I convey my sincere appreciation to all of them.

Our Society's life membership is around 1700 at present and I do hope that this number will reach the 2000 mark by next year. I seek the support and cooperation of all the members in reaching this goal.

I am very happy to inform you that the 16<sup>th</sup> CRSI National Symposium in Chemistry (NSC-16) will be held during 7-9 Feb. 2014 and 8<sup>th</sup> CRSI-RSC symposium will be held on 6 Feb. 2014 at the Indian Institute of Technology, Bombay. I am delighted that this symposium is part of the Golden Jubilee celebrations of the chemistry department of IIT, Bombay with Prof. R. Murugavel as the Convener. I warmly invite all of you to participate in the CRSI meeting in Bombay to make it a grand success.

Thanking you,

With best wishes,

S. Chandrasekaran

## News and Announcements:

### Bharat Ratna to C.N.R. Rao

Chintamani Nagesa Ramachandra Rao, FRS (born June 30, 1934), the Founder-President of CRSI, has been awarded BHARAT RATNA, India's highest civilian honour, making him the third Scientist after C. V. Raman and A. P. J. Abdul Kalam to get this most prestigious award. He is currently the National Research Professor and Linus Pauling Research Professor at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore and honorary professor at the Indian Institute of Science.



Bharat Ratna C.N.R. Rao wearing a mysore peta presented by Karnataka Chief Minister Siddaramaiah, with wife at his residence in Bangalore

C. N. R. Rao is a renowned solid state and materials chemist and his work on transition metal oxides led to the understanding of the relationship between materials properties and their structural chemistry. He made immense contributions to nano-materials over the past two decades, besides working on hybrid materials. He has published over 1,600 research papers and 46 books. His publications have received around fifty six thousand citations with an h-index of 108.

C. N. R. Rao received his M.Sc. from Banaras Hindu University in 1953, D.Sc. from Mysore University in 1960 and Ph.D. from Purdue University in 1958. He also received honoris causa doctorate degrees from over 60 universities in India and abroad. He is a member of many of the major science academies in the world including the National Academy of Sciences, U.S.A., the Royal Society, London, the Russian Academy of Sciences, French Academy of Sciences, Japan Academy as well as the Polish, Czechoslovakian, Serbian, Slovenian, Brazil, Spanish, Korean and African Academies and the American Philosophical Society. He is a Member of the Pontifical Academy of Sciences, Foreign Member of Academia Europaea and Foreign Fellow of the Royal Society of Canada. He is on the editorial boards of several leading professional journals

and is a distinguished visiting professor of the University of California and Cambridge University.

C. N. R. Rao is the Chairman of the Scientific Advisory Council to the Prime Minister, past President of The World Academy of Sciences (TWAS) and Founder-President of the Materials Research Society of India. He was President of the Indian National Science Academy (1985-86), the Indian Academy of Sciences (1989-91), the International Union of Pure and Applied Chemistry (1985-97) and the Director of the Indian Institute of Science (1984-94). He was the Chairman of the Science Advisory Council to Prime Minister Rajiv Gandhi (1985-89) and Chairman, Scientific Advisory Committee to the Union Cabinet (1997-98).

He received various medals, honours and awards which include the Marlow Medal of the Faraday Society (1967), S. S. Bhatnagar Prize (1968), Padma Shri (1974), Centennial Foreign Fellowship of the American Chemical Society (1976), Royal Society of Chemistry (London) Medal (1981), Padma Vibhushan (1985), Honorary Fellowship of the Royal Society of Chemistry, London (1989), Hevrovsky Gold Medal of the Czechoslovak Academy (1989), Blackett Lectureship of the Royal Society (1991), Einstein Gold Medal of UNESCO (1996), Linnett Professorship of the University of Cambridge (1998), Centenary Medal of the Royal Society of Chemistry, London (2000), the Hughes Medal of the Royal Society, London, for original discovery in physical sciences (2000), Karnataka Ratna (2001) by the Karnataka Government, the Order of Scientific Merit (Grand-Cross) from the President of Brazil (2002), Gauss Professorship of Germany (2003) and the Somiya Award of the International Union of Materials Research (2004). He is the first recipient of the India Science Award by the Government of India and received the Dan David Prize for science in the future dimension for his research in Materials Science in 2005. He was named as Chemical Pioneer by the American Institute of Chemists (2005), Chevalier de la Légion d'Honneur by the President of the French Republic (2005) and received the Honorary Fellowship of the Institute of Physics, London (2006) and St. Catherine's College, Oxford (2007). He received the Nikkei Asia Prize for Science, Technology and Innovation (2008). He was awarded the Royal Medal by the Royal Society (2009) and the August-Wilhelm-von-Hoffmann Medal for his outstanding contributions to chemistry by the German Chemical Society (2010).

materials research in 2011. He has been awarded the Albert Einstein Professorship by the Chinese Academy of Sciences (2012). In November 2013, he has been elected as honorary foreign member of Chinese Academy of Sciences.

### The 16th CRSI National Symposium in Chemistry and 8th CRSI-RSC Symposium

The 16th National Symposium in Chemistry (NSC-16) will be organized at Indian Institute of Technology, Bombay (IITB), Mumbai, during February 7-9, 2014. The 8th CRSI-RSC joint symposium will be held on February 6, 2014. These two meetings will be convened by R. Murugavel. The next General Body Meeting will be held at IITB on February 8, 2014. Members may contact the convener (Email: [rmv@chem.iitb.ac.in](mailto:rmv@chem.iitb.ac.in), [muruks@iitb.ac.in](mailto:muruks@iitb.ac.in)) for further information. The list of speakers include: C. N. R. Rao, V. K. Aggarwal, Arunava Gupta, Andrew B. Holmes, R. J. M. Nolte, Jean Marie Lehn, L. F. Tietze, William B. Tolman, Hiro-o Hamaguchi, S. S. Krishnamurthy, J. P. Mittal, P. K. Chattaraj, S. Goswami, S. Ramakrishnan, Vinod K. Singh, Amitabha Patra, H. N. Ghosh, A. C. Bhasikuttan, Prasenjit Ghosh, M. Jayakannan, Rukshana I. Kureshy, R. K. Mahajan, I. N. N. Namboothiri, Bhisma K. Patel, Satish Patil, S. Perumal, C. V. Ramana, A. Srinivasan, Surinder Mehta.



Indian Institute of Technology, Bombay (IITB), Mumbai

### Highlights of the 15th CRSI National Symposium in Chemistry (NSC-15)

The 15th National Symposium in Chemistry (NSC-15) was organized by the Department of Chemistry, Faculty of Science Banaras Hindu University (BHU), Varanasi, during February 1-3, 2013. BHU, established in 1916 by Mahamana Pandit Madan Mohan Malviya, ranks among the first few in the country in the field of academic and research output. BHU is located at the southern edge of Varanasi near banks of the River Ganges. The university has two campuses, 3 institutes,

16 faculties, 121 departments, 4 advanced centers and 6 interdisciplinary schools. The University is making its mark at the national and international levels in a number of frontier areas of Science, Social Science, Technology, Medicine and Agriculture etc. BHU has nearly twenty thousand students including 2500 research scholars and 650 foreign students from 34 countries, who are pursuing different academic programmes at this campus as well as the newly established Rajiv Gandhi South Campus.



Banaras Hindu University, Varanasi

The purpose of this symposium was to provide a forum for the scientists, teachers and students in the country to participate and discuss the recent development in chemistry. The symposium was very well attended by more than 800 registered participants from all over India. Majority of the participants were post-graduate and research students. The symposium was inaugurated with garlanding the bust of Mahamanaji and lighting the inaugural lamp.



Lighting of lamp during the inauguration of NSC-15 at BHU, Varanasi

During the inaugural session, the students from the Faculty of Performing Arts sung beautifully Kulgeet, the university's anthem written by Sir Shanti Swarup Bhatnagar. S. K. Sengupta, Dean, Faculty of Science and B. Singh, the Head Department of Chemistry delivered the welcome addresses. C.N.R. Rao, Founder President, CRSI, shared his memories of his stay at BHU. G. Mugesh gave the welcome address on behalf of CRSI. This was

by S. Chandrasekaran, President, CRSI. The importance of Chemistry in life and in the sustainable development was strongly emphasized by all the dignitaries. In the end of inaugural session, D. S. Pandey, Convener, NSC-15, proposed vote of thanks.



Kulgheet by the students from the Faculty of Performing Arts, BHU

The symposium comprised of various special, medal and award lectures, a mini theme symposium and two poster sessions. The first technical session started with a special lecture by C. N. R. Rao, who shared his 60 Years of Research in Chemistry. This was followed by C. N. R. Rao Award Lecture by Dongyuan Zhao, Fudan Univeristy, China. He presented an update on synthesis and applications of ordered mesoporous materials. The third C. N. R. Rao National Prize in Chemical Sciences lecture was given by A. K. Ganguli, Indian Institute of Technology, Delhi, who discussed about controlling the size, assembly and shape of nanostructures using microemulsions for energy and environmental applications.



C. N. R. Rao Award Lecture by Dongyuan Zhao at NSC-15

The first poster session was held after lunch and ~180 students presented their posters in all areas of chemistry. After the poster session, the third session started with the lecture by CRSI Honorary Fellow, E. W. (Bert) Meijer, Eindhoven University of Technology. He presented a brief overview on non-covalent synthesis of functional supramolecular systems. This was followed by another CRSI Honorary Fellow lecture by

Takuzo Aida, The University of Tokyo, who discussed about the application of advanced molecular design for the development of functional soft materials. The two CRSI Medal lectures were then presented by T. V. Rajanbabu, The Ohio State University and S. Bhargava, RMIT University. While T. V. Rajanbabu discussed about the use of olefin and acetylenes in stereoselective synthesis, S. Bhargava highlighted the importance of C-H activation in benzene using organometallic gold complexes. After the CRSI medal lectures, a Silver Medal Lecture was delivered by A. Ajayaghosh, National Institute for Interdisciplinary Science and Technology, Trivandrum. His talk was focused on supramolecular control of helicity in self-assembled- systems and gelators. The first day of symposium ended with a cultural programme.



Cultural Program at NSC-15 at BHU, Varanasi

The second day of the symposium started with C. N. R. Rao National Prize Lecture in Chemical Sciences, which was delivered by S. Chandrasekhar, Indian Institute of Chemical Technology, Hyderabad. He talked about the synthesis of bio-active molecules, which are important for human health care. The Sixth Darshan Ranganathan Memorial Lecture was presented by Swagata Dasgupta, Indian Institute of Technology, Kharagpur. She described her investigation on the interactions between proteins and small molecules ranging from carrier proteins such



Cultural Program at NSC-15 at BHU, Varanasi

as human and bovine serum albumins to enzymatic proteins such as ribonuclease A and angiogenin. It followed a lecture by CRSI Honorary Fellow, Martin Jensen, Max-Planck Institute for Solid State Research. He conceptualized the way towards rational planning of syntheses in solid state chemistry. He discussed about the integrity of computation in the solid state and materials synthesis.

In the silver medal lecture, M. Palaniandavar of Central University of Tamil Nadu, provided an outlook on the anticancer activities of simple and mixed ligand transition metal(II) complexes of diimines. This was followed by a bronze medal lecture by K. P. Kaliappan of the Indian Institute of Technology, Bombay, on development of new strategies for the syntheses of complex natural products and natural product like molecules, which are of biological and medicinal importance. In another bronze medal lecture, Sundargopal Ghosh of the Indian Institute of Technology, Madras, gave a glimpse of boron clusters, concerning the isolation of clusters possessing more than 15-vertices. In the next lecture, Nitin Chattopadhyay of Jadavpur university talked about the photophysics of poly(N-vinylcarbazole). T. K. Maji of Jawaharlal Nehru Centre for Advanced and Scientific Research, Bangalore, elaborated on the CO<sub>2</sub> uptake in flexible MOFs. The next Silver Medal Lecture was delivered by G. Krishnamoorthy of Tata Institute of Fundamental Research, Mumbai, who described about the critical evaluation of schemes beyond two-state model of protein folding and unfolding. This was followed by the second poster session, where ~180 students presented their posters.



Poster session at NSC-15 at BHU, Varanasi

The next session started with a Bronze Medal Lecture by Sabu Thomas of Mahatma Gandhi University, Kottayam. He deliberated on the viscoelastic phase separation and the development of micro and nanomorphologies in epoxy based blends for super

toughness. In the next lecture, G. Panda of CSIR-Central Drug Research Institute, Lucknow, discussed about the amino acid based anticancer agents over alkaloids and steroidomimetics. C. Retnaraj of Indian Institute of Technology, Kharagpur, talked about the functional scaffolds based on molecular assemblies and nanomaterials for electrochemical applications. He also discussed about the use of functional scaffolds for detection of cholesterol, uric acid, glucose, etc. The next lecture was presented by G. J. Sanjayan, National Chemical Laboratory, Pune, on the generation of conformationally ordered synthetic scaffolds capable of displaying diverse secondary structural features such as helices, sheets, etc. Tarun K. Mandal of Indian Association for the Cultivation of Science, Kolkata, highlighted his research group's contributions on the synthesis of various well-defined functional polymer-based materials using different controlled polymerization techniques. In the final lecture of this session, B. L. V. Prasad of National Chemical Laboratory, Pune, talked about the advantages of digestive ripening process for the preparation of monodispersed nanoparticle dispersion and superlattices.



Lifetime Achievement Award to K. K. Balasubramanian at NSC-15

Lifetime Achievement Lectures (Gold Medal lectures) were delivered by V. Krishnan, Jawaharlal Nehru Centre for Advances Scientific Research, Bangalore and K. K. Balasubramanian, Sri Ramachandra University, Chennai. V. Krishnan presented a broad overview of various contributions made in the areas of crown ethers, porphyrins, phthalocyanines and the metals involved in macrocyclic systems. He revealed the importance of these compounds in electron transport phenomena in photosynthetic process. The lecture by K. K. Balasubramanian dealt with a few selected Domino transformations that his research team worked upon over a time span of four decades. He also discussed about the mechanisms involved in the Domino transformations.



Lecture by M. S. Balakrishna at the mini-symposium

The third day started with a mini-symposium on coordination chemistry. In the first session of this mini symposium, S. Baitalik of Jadavpur University, Kolkata, delivered a talk on light harvesting system based on polypyridyl and imidazole complexes of Ru(II) and Os(II). Further, he also mentioned that his research group's activity is directed towards exploiting the signals (color, fluorescence, redox potentials, etc.) of these metal complexes as a result of supramolecular anion and cation interactions. The next lecture by M. S. Balakrishna of Indian Institute of Technology, Bombay, focused on the synthesis and catalytic applications of polydentate and hybrid phosphorus (III) metal complexes involving both early and late transition metals. He further revealed the flexibility in their steric and electronic properties assist in producing appropriate metal complexes, which can promote homogeneous catalysis under mild conditions. Rajeev Gupta of University of Delhi, discussed about the design and development of coordination complexes as the building blocks for the generation of ordered structures and their application in supramolecular chemistry and catalysis. S. Bhattacharya, Banaras Hindu University, Varanasi, presented synthetic strategies, structural aspects of the metal complexes of sulfur containing ligands as precursors for the synthesis of sulfide materials.



Lecture/Demonstration by Uday Maitra at NSC-15

The presentation of Bronze Medal Lectures was continued after the mini symposium. Prodeep Phukan, Gauhati university, Guwahati talked about the development of a catalyst-free nitrene-transfer process. He described his investigation on the use of N,N-dibromo-p-toluene sulfonamide as a reagent for generation of sulfonylnitrene in presence of a base under mild conditions. R. C. Deka of Tezpur University, Tezpur, discussed about the combined theoretical and experimental studies on catalytic activities of metal complexes in supported zeolite. The next lecture by A. K. Sinha, CSIR-Institute of Himalayan Bioresource Technology, Palampur, was focused on the protection-group-free approaches for natural and non-natural bioactive phenolics. Inspired by the light emitting materials, M. L. P. Reddy of National Institute for Interdisciplinary Science and Technology, Trivandrum, discussed about the lanthanide benzoates as highly efficient light emitting materials.



Students' participation in the Chemical Education Program at NSC-15

As in the previous year, a special session dedicated to chemical education was held on the last day. The chemical education programme is envisaged towards the popularization of chemistry. The final session of the symposium began with the fun with chemistry experiments and demonstration by Uday Maitra from Indian Institute of Science, Bangalore. He brought out the concept of luminescence and several exciting experiments in an enthusiastic way to inspire the new generation about chemistry. This event was immediately followed by science teacher presentations. Six teachers, Shashi Shukla (Central Hindu Boys School, Varanasi), Nivedita Agarwal (Govt. Girls' PG College, Reva), Satyen Saha (Banaras Hindu University, Varanasi), G. Madhurambal (A.D.M. College for Women, Nagappatinam), Ashutosh Gupta (UP College, Varanasi), Damyanti Aggarwal (Maharana Prataap College of Engineering, Kanpur) who were selected for the Best

Teacher Award, shared their experience of teaching and made suggestions for the improvement of teaching at school and college levels.

In the concluding session, the President presented best poster awards to students. The CRSI best poster awards went to Saurabh K. Singh (IIT Bombay), Amit Shard (Palampur), Madhulata Shukla (BHU, Varanasi), Palas Baran Pati (IISER Kolkata). Amit A. Vernekar (IISc, Bangalore) received a poster prize, instituted in memory of Bhaskar G. Maiya. Amrita Ghosh (IACS, Kolkata) received the Goverdhan Mehta best poster prize in the area of organic chemistry. Girijesh Kumar (Delhi University) was awarded the Dalton Transactions poster prize, which comprised of a year's free e-subscription to the journal and a certificate. Five students, Ankush Gupta (GNDU, Amritsar), Suneesh Karunakaran (NIIST, Trivandrum), S. Sangeeta (National College, Trichy) and Sandhya Rani Gogoi (Tezpur University), received financial support from the RSC for their participation in the 7th CRSI-RSC Symposium and 15th NSC. The meeting ended with vote of thanks by the Secretary, N. Jayaraman.



Vote of thanks by N. Jayaraman, Secretary CRSI at NSC-15

### Highlights of the 7th CRSI-RSC Joint Symposium

The 7th CRSI-RSC joint symposium in chemistry was held on January 31, 2013. The symposium was inaugurated with the welcome address by S. Chandrasekaran, President CRSI and David Phillips, Immediate Past President, RSC. S. Chandrasekaran and David Phillips highlighted that the symposium is expected to foster collaboration between the UK and Indian scientists and benefit students from both the countries. The first lecture was delivered by Michael Ward, University of Sheffield, Sheffield. He delivered the talk on self-assembly polyhedral coordination cages with metal. He further discussed about the dynamic behaviour and host-guest chemistry of these cages. S. G. Dey from Indian Association for the Cultivation of Science,

Kolkata, presented a talk on the role of heme in Alzheimer's disease. In the first session, two short oral presentations were given by Elaine O'Reilly, University of Manchester and Kotni Santhosh, University of Hyderabad.



Address by David Phillips, Immediate Past President, RSC

In the second session, Adam Lee, University of Cardiff, highlighted the importance of engineering the active sites of the catalytic system for clean catalytic technologies. E. N. Prabhakaran, Indian Institute of Science, Bangalore, presented the design and synthesis of the first imidate isosteres for peptide bond. He further discussed about the disallowed conformations of residues and their structural effects on protein fold. The session also had three short oral presentations by Fezile Lakadamyali, University of Cambridge, Anurag Sunda, Indian Institute of Science Education and Research, Pune, and Venkata Rao, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore.



Presentation of a memento to S. G. Dey by Alejandra Palermo, RSC

The third session started with a lecture by Robert Glen, University of Cambridge. He highlighted the importance of metabolism and transport, which are the key biological properties of medicines. This lecture was followed by another lecture by Rahul Banerjee, National Chemical Laboratory, Pune, that was focused on the covalent organic frameworks for hydrogen storage, carbon capture and proton conduction applications. After this, a short oral presentation was given by Amrita Pal, Indian Institute of Technology, Kharagpur.



Short Oral Presentation by Amrita Pal

The final session of the CRSI-RSC symposium began with a lecture by Marcel Jaspars, University of Aberdeen. Marcel brought out the structural understanding of the cyanobactin biosynthesis. The session ended with a short oral presentation by Naresh Kumar, Guru Nanak Dev University, Amritsar.

### Minutes of the General Body Meeting (GBM) held in BHU

The President S. Chandrasekaran formally welcomed the members and thanked them for taking time and effort to come over to the meeting. In his opening remarks, President first placed on record his sincere appreciation and thanks for the grand organization of the 14th CRSI National Symposium in Chemistry in Trivandrum, under the Chairmanship of Suresh Das (NIIST, Trivandrum) and E. D. Jemmis (IISER Trivandrum) with D. Ramaiah as the Convener of the symposium. He also thanked T. K. Chakraborty and S. Batra for successfully organizing the 2012 Mid-year symposium at CDRI, Lucknow, during July 21-22, 2012. He expressed his deep appreciation for the excellent arrangements made by the local organizers for this year's annual meeting and the symposium. This was followed by the confirmation of the minutes of the previous GBM.

The Secretary General, G. Mugesh, informed the General Body about the initiatives of CRSI and the increase in the number of memberships to the Society. He briefed about the meeting in Weinheim conducted by Wiley-VCH and the Asian Chemical Editorial Society (ACES) on June 29, 2012. He mentioned that CRSI will be participating in the 9th ACES meeting, which will take place in Singapore on August 24, 2013, following the 15th Asian Chemical Congress (ACC, August 21-23, 2013). He also mentioned that the 2013 Mid-year meeting will be held in NITK Surathkal and the first Indo-US symposium on molecular materials will be held at IISc Bangalore during July 15-17, 2013.

President CRSI gave away CRSI medals to all the 2013 CRSI medalists. After the presentation of medals, items from the Council were discussed by the President. He mentioned that V. K. Aggarwal and Arunava Gupta were selected for the CRSI Medals 2014 and R.J.M. Nolte, L. Tietze and Andrew Holmes were selected for the honorary fellowship for their seminal contributions to the chosen areas of chemistry. The members of the Society endorsed the same.



Lifetime Achievement Award to V. Krishnan at NSC-15

CRSI local chapter activities were also discussed. The President informed the members that the Council approved the reorganization of the local chapters.

**Ahmedabad:** Y. K. Agrawal (Gujarat Forensic Sciences University) and V. K. Jain (Gujarat University); **Annamalainagar:** M. Swaminathan (Annamalai University), and G. Madhurambal (A.D.M. College for Women, Nagapattinam); **Bhubaneshwar:** A. Srinivasan (NISER, Bhubaneshwar) and V. R. Pedireddi (IIT Bhubaneshwar); **Chandigarh:** Subodh Kumar (Guru Nanak Dev University); and Samrat Mukhopadhyay, IISER Mohali; **Chennai:** P. Goutam (Anna University) and V. Subramanian (CLRI); **Delhi:** N. G. Ramesh (IIT Delhi) and Diwan S. Rawat (University of Delhi); **Hyderabad:** A. Samanta (Univ. of Hyderabad) and S. Chandrasekhar (IICT, Hyderabad); **Jaipur:** Anshu Dandia (University of Rajasthan), Neelima Gupta (University of Rajasthan) and Raakhi Gupta (The IIS University, Jaipur); **Kanpur:** Amalendu Chandra (IIT Kanpur) and J. K. Bera (IIT Kanpur); **Kharagpur:** Amit Basak (IIT Kharagpur) and Manish Bhattacharjee (IIT Kharagpur); **Kolkata:** Sameresh Bhattacharya (Jadavpur University) and S. Mondal (IISER Kolkata); **Mumbai:** K. P. Kaliappan (IIT Bombay) and A. K. Tyagi (BARC); **North Bengal:** Basudev Basu (NBU, Siliguri) and Amiya K. Panda (NBU, Siliguri); **North East Region:** Prodeep Phukan (Gauhati University), B. K. Patel (IIT Guwahati) and R. C. Deka (Tezpur University); **Pune:** C. S. Gopinath (NCL, Pune)



and Vidya Avasare (Sir. Parshurambhau College, Pune); **Trichy/Madurai:** M. Palaniandavar (Thiruvavur) and R. Ramaraj (MKU); **Trivandrum:** K. George Thomas (IISER Trivandrum) and Sabu Thomas (Kottayam); **Varanasi:** Lalan Mishra (BHU, Varanasi), Satyen Saha (BHU) and K. N. Singh (BHU)

The President informed the members that the council discussed about the chemical education programme and decided that the chemical education and teachers programmes to be kept separate from the main meeting. It was decided to form a Committee to work out the details of planning for the chemical education programme. It was suggested and accepted that V. Krishnan be the Convener and Uday Maitra, K. N. Ganesh and R. Ramaraj be the other members of the committee to formulate the guidelines of the Chemical Education programme.

The members were informed that the 16th CRSI Annual Meeting will be held at IIT Bombay, during Feb. 7-9, 2014, to be convened by R. Murugavel. President also mentioned about the proposal received for conducting future meetings from Gujarat University and Forensic Science Institute, Ahmedabad. In this regard, Ahmedabad as a venue for the 17th CRSI Annual meeting in 2015 was accepted and approved.

Other discussions included the suggestion by Saurav Pal to initiate Institutional membership, Satyen Saha about improvement of chemical education programme; M. S. Balakrishna's suggestions to make the CRSI certificates more attractive and Sabu Thomas's suggestions to include lectures by industrial R&D personnel and workshop for teachers. The president assured the general body that these suggestions will be considered. The general body meeting ended with a vote of thanks.

### Highlights of the Mid-Year Symposium 2013

The 7th mid-year meeting was held at the National Institute of Technology, Karnataka (NITK), Surathkal, during July 12-13, 2013. The symposium started with a welcome by G. Mugesh and opening remarks by S. Chandrasekaran. The first scientific session began with a lecture by Sambasivarao Kotha of Indian Institute of Technology, Bombay on diversity oriented approach to unusual amino acid derivatives and peptides. The second lecture was delivered by Pritam Mukhopadhyay of Jawaharlal Nehru University, New Delhi. He

presented on the new possibilities of thermal electron transfer reactions. This lecture was followed by a lecture by Sujit K. Ghosh, Indian Institute of Science Education and Research, Pune, wherein, he discussed about the structural dynamism and functional studies of porous coordination polymers.



Inauguration of the Mid-Year Symposium 2013 at NITK Surathkal

In the second session, V. Subramanian, CSIR-Central Leather Research Institute, Chennai delivered a talk on the carbon nanomaterials induced structural changes in  $\alpha$ -helical peptides by molecular dynamics simulation. Immediately after this talk, R. Ramesh of Bharathidasan University, Trichy, presented his research team's contribution in the areas of organometallic chemistry. He discussed about pincer organometallic complexes in sensing and catalysis applications. K. M. Sureshan of Indian Institute of Science Education and Research, Trivandrum, delivered a presentation on his recent findings on topochemical reactions and their design.

The third session started after lunch, where Vandana Bhalla, Guru Nanak Dev University, Amritsar, discussed on the fluorescent discotic materials. She also spoke about the self assembly and sensing applications of these materials. In the next lecture, D. Krishna Bhat of National Institute of Technology, Surathkal, talked on the interest gaining topic on sustainable route to graphene synthesis and its application in superconductors and hydrogen generation. Followed by this lecture, H. S. Atreya of Indian Institute of Science, Bangalore, shared his recent investigation on employing NMR studies on insulin-like growth factor system, which may provide new avenues for cancer diagnosis and therapeutics. This lecture was followed by a poster session wherein, ~30 posters were presented by students.

The second day of the symposium started with a lecture by K. C. Kumara Swamy, University of Hyderabad, on catalytic transformation involving allene/alkynes.

Following this, Abraham John, Gandhigram Rural University, Gandhigram, discussed about the toxic and biochemical sensing by electrochemical and fluorescent



Mid-Year Symposium 2013 at NITK Surathkal

sensors, using nanostructured materials. The next eventual lecture was engaged by Industry expert P. K. Vasudeva, Sequent Scientific Limited, Mangalore.

The last technical session of the symposium began with a lecture by G. Rajaraman, Indian Institute of Technology, Bombay. He described his research on the role of molecular modeling in molecular nano magnets. The final talk of this session and symposium was presented by P. Venkatesu of Delhi University, Delhi. He discussed about the biocompatible ionic liquids and their impact on folding and refolding state of enzymes. The symposium ended with concluding remarks and vote of thanks.



Mid-Year Symposium 2013 at NITK Surathkal

### Minutes of the General Body Meeting held at NIT Surathkal

The general body meeting was held at NITK, Surathkal, on July 12, 2013 during the 7th Mid-year symposium. The meeting began with a welcome by the Secretary General, G. Mugesh, to all the new and existing members of the Society. He thanked the local organizers, particularly A. C. Hegde (Chairman), Arun M. Isloor (Convener), D. R. Trivedi (Jt. Convener) and A. N. Shetty (Secretary) for the excellent organization of

the 7th CRSI mid-year meeting. The CRSI president, S. Chandrasekaran, then addressed the members and welcomed them again. This was followed by the formal confirmation of the minutes of the previous GBM.

The Secretary General then presented a brief report of the activities of the CRSI. He mentioned the successful conduct of the 15th National Symposium in Chemistry (NSC-15) during February 1-3, 2013 and the 7th CRSI-RSC joint symposium in chemistry on January 31, 2013 at Banaras Hindu University, Varanasi. The members were informed that the 16th National Symposium in Chemistry (NSC-16) and the 8th CRSI-RSC joint symposium will be held during February 6-9, 2014, at Indian Institute of Technology, Bombay, Mumbai.



Mid-Year Symposium 2013 at NITK Surathkal

The audited statement of accounts was circulated among the members and the Treasurer, Sourav Pal, made a brief presentation of the income and various expenditures for the year ended 31st March 2013. He indicated the need to get funds through Institutional and Corporate memberships. The audit report was accepted by the General Body.

The President then announced the names of Gold, Silver and Bronze Medal winners for the year 2013. He also announced the name of the scientists, who have been selected for the C. N. R. Rao National Prize for Chemical Research. The President, in his address, urged the members to enthusiastically participate in the activities of the society. He raised several important issues concerning the need to increase the membership, attract young members to the society and have them play an important role in advancing the cause of the chemical sciences in the country.

### Indo-US Symposium on Molecular Materials at IISc Bangalore

The CRSI, in collaboration with the American Chemical Society (ACS), organized an Indo-US Symposium on

Molecular Materials at the Indian Institute of Science, Bangalore, India during July 15-17, 2013. The idea of having a bilateral symposium was brought forward at a meeting between the Secretary DST, T. Ramasami and US officials at Washington DC in 2012. The symposium, which focused on all aspects of materials chemistry, was organized by Uday Maitra, G. Mugesh and Sanjay V. Malhotra with funding support from the Indo-US Science & Technology Forum (IUSSTF) and Science and Engineering Research Board (SERB) of India. The meeting began with remarks by Rajiv Sharma, Executive Director, IUSSTF, T.K. Chandrashekar, Secretary, SERB and T. Ramasami, Secretary, DST. The participants included about 30 speakers from USA and India. C. N. R. Rao delivered the inaugural lecture. This unique gathering offered the opportunity for scientists from both countries to explore research collaboration.



Participants of the Indo-US Symposium on Molecular Materials

The symposium covered scientific presentations in wide range of sub-topics, which included theory of materials, nano-materials, lignocellulosic materials, biomaterials, therapeutics, drug delivery etc. The meeting provided opportunities for very fruitful discussion among participants from both countries. Multiple discussions have been initiated among participants from both countries. This meeting also provided an opportunity for discussion between the representatives of the ACS and CRSI. The speakers were invited to contribute a



Poster Session: Indo-US Symposium on Molecular Materials

chapter in the area of their expertise for a book on the theme of "Molecular Materials". This book will be published by the CRC press sometime in year 2014.

### Ninth Asian Chemical Editorial Society (ACES) Meeting

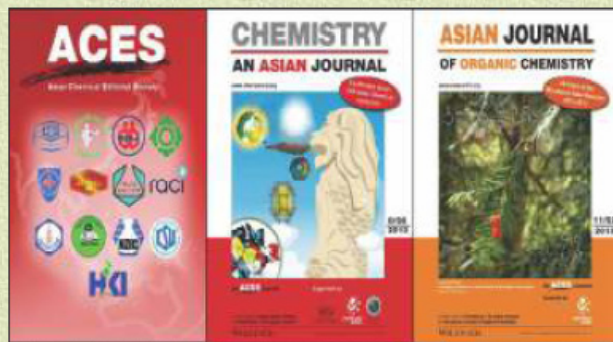
CRSI is a member of the Asian Chemical Editorial Society (ACES), which is a unique association of major chemical societies of Asia and the Pacific regions. ACES, in collaboration with Wiley-VCH, publishes top-quality journals in chemistry with an international readership. ACES was founded in 2005 and currently publishes two major journals in chemistry: Chemistry – An Asian Journal (CAJ) and Asian Journal of Organic Chemistry (AJOC). The participating societies of ACES and Wiley-VCH are committed to provide scientific excellence, high publishing ethics and highest standards in publications. CAJ is supported by ChemPubSoc Europe, Gesellschaft Deutscher Chemiker (German Chemical Society, GDCh) and Federation of Asian Chemical Societies (FACS). CAJ has become a top chemistry journal, and in 2012, the Impact Factor of the journal rose to 4.572. Through its co-ownership of CAJ and AJOC, the CRSI is strengthened by each article that gets published in either ACES journal and can in turn do more to support the chemical community in India. In addition, CRSI members get special benefits, including reduced rates for personal subscriptions to ACES journals. CRSI thus encourages you to submit your next quality manuscript to CAJ or AJOC.



Participants of 9<sup>th</sup> ACES meeting at the Institute of Materials Research & Engineering (IMRE), Singapore

The 9th meeting of the ACES was organized by Tzi Sum Andy Hor at the Institute of Materials Research & Engineering (IMRE), Singapore on August 24, 2013, following the 15th Asian Chemical Congress (August 21-23, 2013). The meeting was attended by representatives from the chemical societies of India, Japan, Hong Kong, Malaysia, Vietnam, South Korea, Indonesia, Thailand and Singapore as well as from Wiley-VCH. Joint ACES activities, opportunities for further collaboration

between ACES and Wiley-VCH and other related issues were discussed in the meeting. The composition of Editorial Board and International Advisory Board for CAJ was also discussed. ACES and Wiley-VCH decided to invite A. Ajayaghosh (NIIST, Trivandrum) and T. Pradeep (IIT Madras) from India to join the Editorial Board and K. N. Ganesh (IISER Pune), E. D. Jemmis (IISc, Bangalore), K. P. Kaliappan (IIT Bombay) and S. Natarajan (IISc, Bangalore) to join the International Advisory Board for the period 2014-17.



### Activities of Local Chapters

The Rajasthan Local Chapter (Conveners: Anshu Dandia, Neelima Gupta and Raakhi Gupta) organized a number of events during first week of August 2013 to celebrate "The Chemistry Week". On 3rd August, a Popular Lecture on "Atmospheric Oxidants" by K.S. Gupta was organized. This lecture brought insight into the oxidative reactions taking place in the environment around us and explained the impact of trace atmospheric constituents, such as volatile organic compounds, polycyclic aromatic hydrocarbons and suspended ash residue on the pH of rain water and its damaging effects. He also suggested some simple topics for research projects to the students. Rakesh Bohra also addressed the research students on this occasion and apprised them about the importance of Scientific Societies and encouraged them to become members of such Societies.



Lecture organized by Rajasthan Local Chapter

In the series of the Chemistry Week celebrations, another guest lecture on "100 Years of Allopathic Medicine" by Pahup Singh was organized on August 7, 2013 at The IIS University, Jaipur for PG/research scholars of faculty of Science. Starting from the discovery of first drug i.e. Arsphenamine in 1907 by Paul Ehrlich for the treatment of syphilis, Professor Singh discussed about the advancement of medicinal chemistry from the discovery of vaccines to heart transplant, in-vitro fertilization techniques, various anti-cancer drugs, Anti-AIDS drugs etc. and the most recent stem cell therapy and human gene mapping.



The Chemistry Week: Rajasthan Local Chapter

Several interactive sessions with Chemistry Professors from various Universities were also conducted for research scholars and PG students. K.C. Patel from Veer Narmad South Gujarat University, Surat (1-8-2013), B. S. Saraswat from IGNOU, New Delhi (6-8-2013) and R. N. Yadav, Hari Singh Gaur University, Sagar (10-8-13) had such sessions with students and discussed about the potential areas of chemical research and opportunities for Chemists in Industry and Academics.

The Chennai Local Chapter (Conveners: P. Goutam and V. Subramanian) organized one-day lecture workshop on "Exploring New Domains in Chemistry" in connection with the Chemistry week on August 12, 2013 at CSIR-CLRI, Chennai. About 150 students from various colleges participated in the symposium. The meeting was convened by V. Subramanian and coordinated by S. N. Jaisankar, K. J. Sreeram, S. Ganesh, and S. Easwaramoorthi of CSIR-CLRI. Five different contemporary topics have been covered in the meeting. The meeting began with a welcome address by B. Unni Nair, Chief Scientist, CSIR-CLRI and presidential address by A. B. Mandal, Director, CSIR-CLRI. Uday Maitra, IISc Bangalore, highlighted various activities of CRSI and also mentioned the contribution of CRSI to the chemistry education. P. Natarajan also addressed gathering and

briefed about the various science activities at Chennai by CSIR-CLRI, IIT Madras, University of Madras and Anna University. P. Gautam, Anna University delivered the vote of thanks.



The Chemistry Week: Chennai Local Chapter

Various challenges in the drug discovery have been lucidly illustrated by Uday Maitra, which was useful to the students to understand the drug discovery process and opportunities in chemistry research. Understanding and working with the fluorescence of complex multifluorophoric systems was the title of the lecture of A. K. Misra, IIT-Madras, Chennai. In his lecture, he has demonstrated the necessity for designing of new techniques to gain more insight into excited states of complex molecules. The application of NMR for drug discovery was addressed by H. S. Atreya, IISc, Bangalore. The significance of design of new cancer therapeutics has also been highlighted by him. The supramolecular chemistry was taken as one of the domains in this meeting. Synthesis of Palladium(II) based self-assembled coordination cages was addressed by Dillip Kumar Chand, IIT-Madras, Chennai. The applications of these cages have also been highlighted during his lecture. The importance of chemistry research in industrial sector, namely, leather tanning sector, has been taken as the other domain in this meeting. J. Raghava Rao, CSIR-CLRI, made a presentation about "Leather Processing without water: Possibilities" to reduce pollution load. Many students have appreciated the initiatives taken by CRSI and CSIR-CLRI during the feedback session. The same has also been expressed by the faculty members from various colleges. The symposium ended with vote thanks by K. J. Sreeram, Principal Scientist CSIR-CLRI followed National Anthem.

The Local Chapter in Annamalainagar, Chidambaram (Conveners: M. Swaminathan and G. Madhurambal) organized a national conference on green chemistry and its global perspectives (GCGP-2013) during March 8-9,



The Chemistry Week: Chennai Local Chapter

2013 at A.D.M. College for Women (Autonomous), Nagapattinam. More than 100 students and teachers from many universities and colleges in the region participated in the symposium. The speakers included M. Swaminathan (Annamalai University), M. R. R. Prasad (Vikram Sarabhai Space Centre, Trivandrum), B. Sridhar (Indian Institute of Chemical Technology, Hyderabad), R. Renganathan (Bharathidasan University, Trichy) and L. Rathi Shankar (Learning and Consultancy Solutions, Chennai).



GCGP-2013 at A.D.M. College for Women, Nagapattinam

Several topic related to green chemistry such as green tools for sustainable chemistry, photocatalysis, tidal energy, biofuels, effluent treatment, solar energy for toxic chemical degradation, green protocols for organic synthesis, Social Science perspectives on green chemistry, green synthesis practices and characterization techniques and supercritical water oxidation and dry media reactions were discussed. The meeting was concluded with a suggestion that a mandatory project work on green chemistry practices must be initiated in all educational institutions as part of the curriculum at graduate and postgraduate levels.

The Varanasi Chapter (Conveners: Lalan Mishra, Satyen Saha and K. N. Singh) organized a special lecture for the undergraduate and graduate students at the Department of Chemistry on August 23, 2012. This



GCGP-2013 at A.D.M. College for Women, Nagapattinam

lecture titled "Hyper-Raman Spectroscopy: Basics and applications to Chemical Science" was delivered by Rintaro Shimada of Department of Applied Chemistry, National Chao Tung University, Hsinchu, Taiwan. He discussed some basic aspects of 'Hyper-Raman spectroscopy' with the audience. He mentioned the importance of Hyper-Raman and how this can be used to elucidate the vibrational modes of a molecule which normally cannot be achieved with Raman and IR spectroscopic techniques. He also discussed about the application of this spectroscopic technique for a variety of chemical systems. The lecture also included the theoretical aspects of Hyper-Raman spectroscopy. The organizers extended their sincere thanks to the speaker for his lecture which was well appreciated. The Varanasi Chapter also organized a special lecture on Mathematical Modeling: An Introduction, by S. K. Basu, Department of Computer Science, Banaras Hindu University on October 9, 2013. The speaker discussed about the application of computational/mathematical modeling for understanding various problems, including some basic biochemical aspects of enzyme kinetics.



Varanasi Chapter: Special Lecture by Rintaro Shimada

The North Bengal University, Siliguri Local Chapter of CRSI organized two one-day programs for the school students during 2012-13. The first program was held on August 22, 2012 and the second program was organized on March 22, 2013. In both programs, students of X-XII standards from some schools located

in adjoining areas participated. In the first program, one lecture was delivered by Prof. Nitin Chattopadhyay of Jadavpur University, Kolkata. A "Quiz-on-Chemistry" was conducted by the M.Sc. students of this department. Finally, a few chemical reactions were demonstrated by research scholars of this department. In the second program held on March 22, 2013, only "Quiz-on-Chemistry" and practical demonstrations were displayed. The major objectives of these two programs were to popularize Chemistry and keep amused with the chemical phenomena. Some books on the biography of legendary scientists were presented to the students, who have performed well in the "Quiz-on-Chemistry".

The Institute of Research and Development, Gujarat Forensic Sciences University, Gandhinagar and Department of Chemistry, Gujarat University Ahmedabad, jointly, under the auspices of Ahmedabad Local Chapter (Conveners: Y. K. Agrawal and V. K. Jain) organized a two days seminar on "Supramolecules and Nanotechnology" during October 18-19, 2013. The conference was inaugurated by V. Krishnan, Jawaharlal Nehru Centre for Advanced Scientific Research and was presided by J. M. Vyas, Director General, GFSU. N. Sahoo, Advisor, GUJCOST, Gandhinagar was the Guest of Honor. The list of speakers included, I. Schechter (Technion University, Israel), C. P. Rao (IIT, Mumbai), A. Chattopadhyay (IIT, Gawahati), R. V. Jasra (Reliance, Baroda), L. M. Manocha (S.P. University, V. V. Nagar), S. M. Khopkar (IIT, Mumbai), G. K. Lahiri (IIT, Mumbai), S. Shukla (Delhi University), Uma Sharma (Vikram University, Ujjain), Parimal Pal (CSMCRI, Bhavnagar).



Ahmedabad Chapter: National Conference on Supramolecules and Nanotechnology

More than 200 delegates from various places like Delhi, Indore, Mumbai etc. have participated in the conference. About 40 posters were displayed by the participants not only from Gujarat but also from other

parts of the country. The speakers discussed on the synthesis, characterization and applications of Supramolecules in the area of Nanotechnology, Health, Environment and Forensic. The lectures on Nanotechnology were focused on energy and pharmaceuticals. New methodologies were suggested for the Crime investigation. The poster session was also very interactive. Three best poster prizes were awarded (1st prize: Vinay Singh and Rahul Kadu; 2nd prize: Hardik Bhatt; 3rd prize: Pranav J. Shah). The conference ended with the group discussion, question-answers amongst the participants and the experts with a vote of thanks. The 17th National Symposium in Chemistry (NSC-17) will be held at Ahmedabad during the first week of February 2015. Details will be sent to all the members in due course.



Ahmedabad Chapter: National Conference on Supramolecules and Nanotechnology

### CRSI Honorary Fellows, 2013-14

Roeland J.M. Nolte (Radboud University Nijmegen, Institute for Molecules and Materials, Nijmegen, The Netherlands), Lutz F. Tietze (Institute of Organic and Biomolecular Chemistry, University of Göttingen, Göttingen, Germany) and Andrew B. Holmes (University of Melbourne, Victoria, Australia).

### Medals/Awards 2014

**C. N. R. Rao Award Lecture:** Andrew B. Holmes (University of Melbourne, Victoria, Australia).

**Animesh Chakravorty Endowment Lecture:** William B. Tolman (University of Minnesota, Minneapolis, USA)

**Mizushima-Raman Lecture:** Hiro-o Hamaguchi (University of Tokyo, Japan)

**Lifetime achievement award (CRSI Gold Medal):** S. S. Krishnamurthy (Indian Institute of Science, Bangalore), J. P. Mittal (Bhabha Atomic Research Centre, Mumbai).

**CRSI Medals:** Varinder K. Aggarwal (School of Chemistry, Bristol University, UK), Arunava Gupta (Department of Chemistry, The University of Alabama, Tuscaloosa, USA)



CRSI honorary fellows, special award and medal winners for 2014

**Silver Medals:** P. K. Chattaraj (Indian Institute of Technology, Kharagpur), S. Goswami (Indian Association for the Cultivation of Science, Kolkata), S. Ramakrishnan (Indian Institute of Science, Bangalore), V. K. Singh (Indian Institute of Science Education and Research, Bhopal)

**C. N. R. Rao National Prize for Chemical Research:** H. N. Ghosh (Bhabha Atomic Research Centre, Mumbai) and A. Patra (Indian Association for the Cultivation of Science, Kolkata).



Gold/Silver medals and C.N.R. Rao National Prize winners for 2014

**Bronze Medals:** A. C. Bhasikuttan (Bhabha Atomic Research Centre, Mumbai), Prasenjit Ghosh (Indian Institute of Technology, Bombay, Mumbai), M. Jayakannan (Indian Institute of Science Education and Research, Pune), A. Kumbhar (University of Pune, Pune), Rukshana I. Kureshy (CSIR-Central Salt & Marine Chemicals Research Institute, Bhavnagar), R. K. Mahajan (Guru Nanak Dev University, Amritsar), I. N. N. Namboothiri (Indian Institute of Technology, Bombay, Mumbai), B. K. Patel (Indian Institute of Technology, Guwahati), Satish A. Patil (Indian Institute of Science, Bangalore), S. Perumal (Madurai Kamaraj University, Madurai), C. V. Ramana (National Chemical Laboratory, Pune), A. Srinivasan (National Institute of Science Education and Research, Bhubaneswar)



Bronze Medal winners for 2014

## New Membership

### Institutional and Corporate Membership

An Institutional and Corporate Members are those who make one-time contribution of an amount of not less than Rs. 1 lakh and 5 lakhs, respectively. Once enrolled as a member, the Institution/Industry will be invited to participate in the CRSI annual and mid-year meetings and will be given a special discount on the registration fee. Every Institutional/Corporate Member can nominate a maximum of three persons to be members of the General Body in any given year and to participate in the annual and mid-year meetings of the Society. Recently, National Chemical Laboratory (NCL), Central

Leather Research Institute (CLRI), CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) and Indian Institute of Science Education and Research (IISER), Mohali, have become Institutional Members and SABIC Research & Technology Pvt. Ltd., Bangalore has become Corporate Member.

For membership applications, please write to: G. Mugesh, Department of Inorganic & Physical Chemistry, Indian Institute of Science, Bangalore 560012, Tel: +91-80-2360-2566; Fax: +91-80-2360-2566; Email: mugesh@ipc.iisc.ernet.in or Raji Subramanyam, Email: raji.subramanyam@gmail.com. One can become a lifetime member of CRSI by paying Rs 5,000.- (Rupees Five Thousand Only) as membership fee. The payment can be made by electronic transfer or demand draft. Details can be found at the CRSI website (<http://crsi.org.in>)

The Chemical Research Society of India has been granted with effect from 26/01/99 the status of Wholly Charitable Trust (certified under section 12A(a) of the Income Tax Act of 1961).