

The Chemical Research Society of India (CRSI)



S. Chandrasekaran

Srinivasan Chandrasekaran is an INSA Senior Scientist at the Department of Organic Chemistry, IISc Bangalore. He held the positions of Honorary Professor, SERB Distinguished Fellow and INSA Distinguished Professor at IISc.

Chandrasekaran is a recipient of S.S. Bhatnagar Prize and is an elected Fellow of the Indian Academy of Sciences, Indian National Science Academy, and The World Academy of Science (TWAS). He served as an elected member of the Bureau and Executive Committee of IUPAC.

He was the President of the Chemical Research Society of India (CRSI) during 2011-14, the Chairman of the National Organic Symposium Trust (NOST) and served as the Editor of Tetrahedron Letters. His research interests include development of new synthetic methodologies and synthesis of natural products.



N. Sathyamurthy

Dr. N. Sathyamurthy, Honorary Professor at the Indian Institute of Science Education and Research Mohali was its Founding Director (2007-2017). He was the President of the Chemical Research Society of India during 2017-2020. A former Institute Chair Professor at the Indian Institute of Technology Kanpur, he has authored/coauthored more than 200 research papers in the areas of chemical dynamics, nonadiabatic interactions and atomic and molecular clusters in free state as well as under confined conditions. He received the S. S. Bhatnagar Prize in Chemical Sciences and is a Fellow of the Indian Academy of Sciences, Bengaluru, Indian National Science Academy, New Delhi and The World Academy of Sciences, Trieste, Italy.



Vinod K Singh

Vinod Singh is a Chair Professor at IIT Kanpur. He is currently the President of the Chemical Research Society of India (CRSI) and the Chairperson of the Governing Council of IACS Kolkata. He is an Editor of Tetrahedron Lett. He is a Member of the Editorial Advisory Board of Org. Lett., J. Org. Chem., Asian J. Org. Chem., and Org. Chem. Frontiers.

He works in the area of synthetic organic chemistry. His research work has been recognized with several awards such as Swarnajayanti Fellowship (1998), Bhatnagar Prize (2004), and Padma Shri (2014), among others. In addition, he has been elected as a Fellow of all the science academies of the country and TWAS.



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Chemistry is a broad discipline that overlaps extensively with Biology, Medicine, Materials science, Physics, and many other areas. There has often been a view expressed and shared among Indian chemists that the discipline has not been properly represented, and its vitality and vigor were not adequately recognized in India.

Accordingly, the first National Symposium in Chemistry, organized in January 1999 at the Indian Institute of Science, Bangalore, had multiple purposes. It heralded the formation of the Chemical Research Society of India (CRSI). It provided a forum for chemists to discuss and share their research contributions in different areas of chemistry with other colleagues. Furthermore, it fostered the growth of chemistry and education in and through chemistry at various levels. The presence of a strong and vibrant Chemical Society of India in the country is essential for developing chemical industries, R&D institutions, and educational institutions and creating national wealth. Compared to many other chemical societies worldwide, CRSI is relatively young, with approximately 3500 members.

The CRSI is the brainchild of Professor CNR Rao, who became its founding President. The CRSI was formally registered as a Society on March 26, 1999, in Bangalore. The seven Founding Members who signed the Memorandum of Association were Professors CNR Rao, S. Chandrasekaran, S. Ramakrishnan, G. Mehta, V. Krishnan, K. J. Rao, and J. Chandrasekhar. (Fig.1)

The CRSI logo

Professor Uday Maitra of IISc Bangalore designed the Logo of CRSI. It includes five images representing most fields of chemistry on India's map: cyclohexane in a chair conformation, two interacting d-orbitals, a top view of ferrocene, an octahedron, and an FID (Fig. 1). Prof. Maitra explained that soon after establishing the CRSI, Professors Chandrasekaran and Krishnan, who served as CRSI Secretaries then, asked him to design a logo. Maitra thought that placing a few chemistry-related graphics on the map of India would reflect the nature of the National Society that encourages and promotes all areas of chemistry. He asked

a graphics person from the IISc campus to draw a map of India and added five chemistry-related images. Everyone accepted this logo.

Objectives of CRSI

1. To recognize, promote and foster talent in Chemistry and Chemical Sciences.
2. To popularize Chemistry in general.
3. To improve the quality of Chemical Education at all levels.
4. To recognize and honor lifetime chemical research achievements through awards, grants, etc.
5. To organize conferences, seminars, workshops, symposia, and other programs to facilitate and promote research in all branches of Chemistry.
6. To interact and coordinate with industry to catalyze the growth of the Chemical Industry.
7. To interact with other societies or associations in India and abroad, having similar objects for mutual benefit and conducting joint programs.
8. To publish newsletters, journals, books, and other forms of communication to highlight the research activities of the Society as also the new developments taking place elsewhere in the chemical sciences.
9. To institute and award fellowships, scholarships, stipends, travel grants, or otherwise support students and research scholars to encourage them to devote themselves to pursuits in the chemical sciences.

10. To undertake other initiatives that are necessary or convenient in connection with or are incidental to the furtherance of the objects of the Society.

In addition to holding annual meetings, the Society initiated other activities, including many local/regional chapters nationwide, organizing lectures in chemistry, publishing a newsletter, and other educational activities with the active participation of members of the Society.

Members of the Society

There are three classes of Members: Individual Life Members, Institutional Members, and Corporate Members.

The membership of CRSI is kept open for all active researchers in the chemical sciences having a postgraduate degree to be enrolled as individual Life members of the Society. The Society sends a Lifetime Membership card to all members, who can enjoy benefits, such as a discount on the registration fees of all future CRSI conferences, a copy of the CRSI Newsletter, and information about joint symposia. An Institutional Member contributes a one-time amount of at least 100,000 Indian Rupees. Once enrolled, the Institutional Member is invited to participate in the CRSI annual and mid-year meetings with a special discount on the registration fees. Every Institutional Member can nominate a maximum of three persons to be members of the General Body in any given year and participate in the Society's annual and mid-year meetings. The nominated members are treated on par with the "Life Members" of CRSI. In addition, the Institutional Member receives information about various activities of CRSI and three copies of the annual newsletter.

The names of the Institutional members are prominently displayed on the Society's website, and their chemistry-related activities are published in the CRSI newsletter.

A Corporate Member contributes a one-time amount of at least 500,000 Indian Rupees. Once enrolled, the Corporate Member is invited to participate in the CRSI meetings and is given a special discount on the registration fees. Every Corporate Member can nominate a maximum of three persons to be members of the General Body in any given year and participate in the



Figure 1. Registration documents and logo of the CRSI.

Society's annual and mid-year meetings. The nominated members are treated on par with the "Life Members" of CRSI. The Corporate Member receives information about various activities of CRSI and three copies of the annual newsletter. The names of the Corporate Members are prominently displayed on the Society's website with a link to the Company.

Organizational Structure

The CRSI is administered by a set of office bearers and Council members. The office bearers of the Society include the President, five Vice-Presidents, one Secretary General and two Secretaries, three Joint Secretaries, a Treasurer, and a Joint Treasurer. The Governing Council consists of a minimum of 40 and a maximum of 60 members drawn from different regions of the country. These numbers include the office bearers. The Secretariat address is Room E117, the Chemical Sciences Building, Indian Institute of Science, Bangalore 560012, India, <https://crsi-india.org>

e-mail address: crsindia1999@gmail.com

Meetings

In the earlier years, an Annual General Meeting of the Society was held once a year in February and a smaller mid-year meeting in July. Due to increasing demand from the many members, the CRSI-National Symposium in Chemistry (CRSI-NSC) takes place twice a year, in February and July (Fig. 2). The meeting of the Council is also held twice a year during the symposium (Fig. 3).

Local/Regional Chapters of CRSI

The CRSI Council, at its meeting in Chennai in 2003 decided to establish Local/Regional Chapters of the Society. Every Chapter normally has 20 or more members, formally located at an institution, a university, or a college. The regional chapters aim to propagate the main CRSI goals:

Enhance visibility of chemical science research.

Emphasize the importance of chemistry as science developed to societal wellbeing.

Promote chemical education at all learning levels and inculcate student community interest.

Typical activities within the regional chapters include:

1. Organizing regional meetings on selected topics to allow young researchers to congregate and share their excitement.
2. Organizing lectures by eminent scientists.
3. Promoting activities in chemical education at all levels involving teachers and students.
4. Organizing various activities, such as exhibitions and contests, to enhance the image of chemistry and visibility of CRSI.
5. Promoting academic research and industry interactions at various levels.



Figure 2. a) Dr A.V. Rama Rao, Avra Laboratories Pvt. Ltd, Hyderabad, delivering a lecture, b) CRSI symposium in progress.



Figure 3. Left, Presidential address by Prof G Mehta at IIT Kanpur, 2004. Right, felicitation of Founding President of CRSI Professor C. N. R. Rao by Professor S. Chandrasekaran, Former President, CRSI (2014)



Figure 4. Left, poster prize winners. Right, Sir David Clary receiving the Honorary Fellowship of CRSI at the 24th CRSI National Symposium, Chennai, February 2019. Also seen are Professors N. Sathyamurthy and Sourav Pal, former Presidents of CRSI.

6. Celebrating important milestones in chemical research and National Chemistry Day.

Each Chapter has a convenor or a co-convenor to take care of the activities of the Chapter. The CRSI office in Bangalore is kept informed of the planned activities. The activities of the regional chapters are regularly highlighted in the CRSI Newsletter and the General Body meeting of CRSI.

There are 21 regional Chapters of CRSI located in different parts of the country, including Chandigarh, Chennai, Hyderabad, Pune, Kanpur/Lucknow, Kharagpur, Kolkata, Trivandrum/Cochin/Calicut, Tiruchi/Madurai, North-East Region, Varanasi, Chidambaram, North Bengal, Bhubaneswar, Mumbai, Delhi, Ahmedabad, Jaipur, Jammu/Kashmir, Suratkal/Mangalore, and Raipur.

To keep the members informed and connected, the CRSI publishes a Newsletter at regular intervals.

Awards and Recognitions

The Society recognizes outstanding achievements in chemistry through Lifetime achievement awards (Gold Medals), Silver medals (for established chemists), and Bronze medals (for promising young chemists). In addition, several other awards instituted by private bodies and administered through the CRSI: Prof. CNR Rao Award Lecture, by AVRA Laboratories, Prof. CNR Rao National Prize for Chemical Sciences, Prof. Animesh Chakravorty Endowment Lecture Award, Dr. Darshan Ranganathan Memorial Lecture Award, Prof. S. Chandrasekaran Endowment Lecture Award, Prof. Charusita Chakravarty Memorial Lecture Award, and Prof. Mizushima–Raman Lecture Award.

At the end of every symposium, A CRSI Research award goes to a young chemist from the region of the host organization. In each meeting of the CRSI, young chemists are encouraged to present their research through posters. Some selected ones receive certificates and cash prizes sponsored by the Journal of Chemical Sciences (Indian Academy of Sciences, Bengaluru), the American Chemical Society, and the Royal Society of Chemistry. In addition, there is a Professor Bhaskar Maiya Memorial Poster Award instituted by Professor V Krishnan and a Best Poster Prize instituted by Professor G. Mehta. One "R K Barua Memorial Poster Prize" is awarded yearly from the funds endowed by the Society for Chemical Education, Assam (Fig. 4).

The CRSI Medal is conferred on chemists of Indian origin working abroad who have made outstanding contributions to chemical research. The awardees participate and lecture on their research in the CRSI meetings.

The honorary fellowship of CRSI is conferred on eminent chemists worldwide to recognize their contributions to chemistry. They are invited to lecture at the CRSI National Symposium in Chemistry. As of 2022, 61 scientists have become Honorary Fellows: Henri B. Kagan (France), A. Müller (Germany), G. Whitesides (USA), Mostafa El-Syed (USA), Steven V. Ley (UK), Ahmed H Zewail (USA), Y.T. Lee (Taiwan), Howard Alper (Canada), Joshua Jortner (Israel), D.A. King (UK), Jean-Marie Lehn (France), Masakatsu Shibasaki (Japan), Alan R. Katritzky (USA), Arndt Simon (Germany), Fred Wüdl (USA), Keitaro Yoshihara (Japan), A. Kuznetsov (Russia), A. Vasella (Switzerland), M. Jensen (Germany), R. N. Zare (USA), Chi-Huey Wong (Taiwan) Karl Wieghardt (Germany), Hisashi Yamamoto (Japan), Tobin J Marks (USA),

Chunli Bai (China), Bengt Norden (Sweden), Ashok Vijn (Canada), Akira Fujishima (Japan), Ronald Breslow (USA), Michael Grätzel (Switzerland), Chris Dobson (UK), Daniel Nocera (USA), Susumu Kitagawa (Japan), Marc Fontecave (France), Richard Catlow (UK), F. Fleming Crim (USA), Takuzo Aida (Japan), E.W. "Bert" Meijer (Netherlands), Lutz F Tietze (Germany), Roeland J. M. Nolte, (Netherlands), Andres B. Holmes (Australia), Keiji Maruoka (Japan), Lin-Jun Wan (China), René Gree (France), H. F. Schaefer (USA), Anthony K. Cheetham (UK), Peter Sadler (UK), George C. Schatz (USA), Andrew T. S. Wee (Singapore), William H. Miller (USA), Sir David Clary (UK), Clement Sanchez (France), Donald G. Truhlar (USA), Sunney I. Chan (Taiwan), Matt Rosseinsky (UK), Paul S. Weiss (USA), and David Milstein (Israel).

International Collaboration

CRSI has an agreement of cooperation for the establishment of continuous communication and exchange in the field of chemistry and related areas of knowledge for the benefit of the chemistry community of the Royal Society of Chemistry, the American Chemical Society, Italian Chemical Society, German Chemical Society, the Asian Chemical Editorial Society, and Federation of Commonwealth Chemical Sciences Societies (Commonwealth Chemistry).

Royal Society of Chemistry (RSC): The first Indo-UK joint workshop in Chemistry under the auspices of CRSI and RSC was organized in February 2006 at IIT Bombay, which led to the signing of an agreement of cooperation between CRSI and RSC (Fig. 5) in Delhi in 2007. A decision to arrange one-day joint symposia on the day before the February meeting of CRSI every year has led to 15 such events so far.



Figure 5. Signing the CRSI-RSC Joint Agreement, Delhi, January 2007.

American Chemical Society: An Indo-US Symposium on Molecular Materials initiated the cooperation between CRSI and the ACS. The event took place at IISc Bangalore during July 15-17, 2013, with funding support from the IUSSTF, New Delhi. An agreement was signed with the ACS in 2017 to organize meetings and conferences. The first CRSI-ACS joint symposium took place at IICT Hyderabad on July 13, 2017, one day before the NSC-22. On July 13, 2018, during the NSC-23 at IISER Bhopal, there was a CRSI-ACS special session. The

2nd CRSI-ACS symposium was held at IIT Kanpur on July 18, 2019, one day before the CRSI meeting. It was later decided that there would be regular CRSI-ACS cooperation through ACS sessions, which will be integrated with the CRSI symposium held in July (Fig. 6).

Asian Chemical Editorial Society (ACES) and Publications: CRSI is a member of the Asian Chemical Editorial Society (ACES), a unique association of twelve major chemical societies in Asia and the Pacific

chemical societies. ACES, in collaboration with Wiley-VCH, publishes top-quality journals in chemistry with an international readership. The ACES was founded in 2005, and CRSI was one of the Founding members. It currently publishes three major international journals: Chemistry – An Asian Journal (CAJ), Asian Journal of Organic Chemistry (AJOC), and ChemNanoMat. The participating societies of ACES and Wiley-VCH are committed to providing scientific excellence, high publishing ethics, and the highest standards in publications. CAJ is



Figure 6. Left, Indo-US symposium on Molecular Materials, IISc Bangalore, July 2013. Right, the first CRSI-ACS Symposium held at IICT Hyderabad in July 2017.

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Figure 7. Asian Chemical Editorial Society and Publications.

supported by ChemPubSoc Europe, the German Chemical Society (GDCh), and the Federation of Asian Chemical Societies (FACS). Through its co-ownership of CAJ and AJOC, CRSI is strengthened by each article published in either ACES journal or can do more to support the chemistry community in India. In addition, CRSI members get special benefits, including reduced rates for personal subscriptions to ACES journals (Fig. 7).

Special Issues of Journals: A virtual collection of articles in ChemComm published by Indian researchers was brought out on the occasion of the 20th anniversary of CRSI. Prof. Sandeep Verma (Associate Editor, ChemComm) and Prof. G. Mugesh (Secretary General, CRSI) served as the guest editors for this virtual issue. Likewise, a special issue of the CAJ (2019, Volume 14, issue 24) was brought out on that anniversary. Sandeep Verma and G. Mugesh served as the guest editors for this special issue. The issue included a foreword by Prof. C.N.R. Rao. A special issue of the CAJ (2009, volume 4, issue 6) was published in honor of Prof. CNR Rao's 75th birthday (Fig. 8).

Celebration of the International Year of Chemistry – 2011: The Society kicked off its International Year of Chemistry (IYC-2011) campaign in Bangalore with a program for high-school students on January 1, 2011. During the 13th Annual Meeting at Bhubaneswar, several activities were organized, with specially commissioned IYC-2011 talks and a program for chemistry teachers. There were four special regional meetings held at Pune (West), Siliguri (East), Jammu (North), and Pondicherry (South) at different times of the year. All the local and regional chapters also carried out a variety of outreach programs during 2011. During the Annual Symposium, thematic lectures were organized, emphasizing the topics of importance to the region, and a book 'Chemistry Today' was released (Figure 9).



Figure 8. The June 2009 CAJ issue dedicated to Prof. CNR Rao's 75th birthday.

Celebrating the International Year of the Periodic Table (IYPT) -2019: A special session dedicated to the IYPT took place during the CRSI-National Symposium in Chemistry held at IIT Kanpur in July 2019 to mark 150 years of Mendeleev's Periodic Table. Many students attended the session and enjoyed listening to exciting stories about the history and making of the periodic table of elements as narrated by V. Chandrasekhar, TIFR Hyderabad and IIT

Kanpur, and Uday Maitra, IISc Bengaluru through live on-stage experiments. (Fig. 9).

Future Perspective

CRSI is committed to expanding its membership and its activities. Its outreach will focus on the UN Sustainable Development Goals (SDGs). It invites young chemists to become CRSI Life Members and join hands in promoting chemistry research in India.



Figure 9. Left and Middle, release of the book 'Chemistry Today' during IYC-2011. Right, a special Session on IYPT during NSC-25 at IIT Kanpur.