

## Professor JAGADESE J. VITTAL

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Google Scholar: <https://scholar.google.com.sg/citations?user=iQFiNgkAAAAJ&hl=en>

### Education

PhD (1982) - Indian Institute of Science, Bangalore, India

MSc (1977) - Madurai University, India

BSc (1975) – University of Madras, India

### Experience

Emeritus Professor, Department of Chemistry, NUS, Singapore from 2021

Professor, Department of Chemistry, NUS, Singapore, (1997-2020)

A faculty member, NUS Graduate School for Integrative Sci. & Engg., (2012-2020)

Director, Chemical, Molecular and Materials Analysis Center (CMMAC), NUS (2011-2015)

Ewha Global Fellow, Ewa Womans University, South Korea (2024-2026)

Visiting Professor, IISER-Trivandrum, India (2024)

Visiting Professor, IIT-Bhilai, India (2023)

Visiting Professor, Chungnam National University, Daejong, S. Korea (2023)

Distinguished Visiting Professor, Beijing Institute of Technology, China (2022-2023)

Adjunct Professor, School of Sci. & Technol. Sunway University, Malaysia (2018-2020)

Visiting Lecturer, Ministry of Science & Technology, Taiwan (2017)

Visiting Professor, University of Toronto, Toronto, Canada (2016)

Honorary Visiting Professor, University of British Columbia, Vancouver, Canada (2015)

Visiting Professor, Indian Institute of Technology, Bombay, India (2013)

Adjunct researcher, Solar Energy Research Institute of Singapore (2013-2016)

WCU (World Class University) Chair Professor, Department of Chemistry, Gyeongsang National University, Jinju 660-701, South Korea, (2009–2013)

Visiting Professor, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore (2009)

Visiting Professor, University of Western Ontario, London, Canada (2008)

Assistant Dean (Graduate Studies, Research and Infrastructure & Space), Faculty of Science, NUS, Singapore (2007-2010)

Manager, X-Ray Structure Facility, Department of Chemistry, University of Western Ontario, LONDON, Canada, (1989–1997)

Senior Research Fellow, Depart. of Aerospace Engg., Ind. Inst. Sci., Bangalore, (1987–1989)

Research Associate, Depart. of Chemistry, University of Western Ontario LONDON, Canada, (1982–1987)

Lecturer in Chemistry, Sri Pushpam College, Poondi, Tamil Nadu, India, (1977–1978)

### **Awards and Honours**

- A special virtual issue “Honoring Professor Jagadese J. Vittal and his Contributions to Functional Molecular Crystals”, by the American Chemical Society journal *Crystal Growth & Design*, 2024/2025
- *Professor N.R. Dhar Memorial Award*”, *Indian Photobiology Society*, 2024/2025
- *Toronto International Invention Innovation Competition in Canada (iCAN 2023)* Gold Medal, 2023
- *Japanese Photochemistry Association Elsevier Lectureship Award*, 2023
- *Chemical Research Society of India (CRSI) Medal*, 2020
- *Indian Chemical Society G.V. Bakore Memorial Award*, 2019
- *Outstanding Chemist Award*, Department of Chemistry, NUS, 2014
- Highlighted in *Angewandte Author Profile*, 2014
- *CRISP Award*, Faculty of Science, NUS 2013/14
- *Outstanding Researcher Award*, NUS, 2011
- *Erudite Scholar-in-Residence*, Kerala State Higher Education Council, India, 2011
- Interview in **thesceptical**chemist, *The Nature Chemistry Blog* in November 03, 2011
- Finalist, *President's Science Award*, Singapore, 2009
- *Outstanding Scientist Award*, Faculty of Science, NUS, 2007
- *ISCAS Bronze Medal*, Indian Association of Solid-State Chemists and Allied Scientists, India for contributions in the field of Solid-State Chemistry, 2001
- *Royal Society of Chemistry Journal Grant Award* for International Authors, 2002 & 2008
- *DAAD-NUS Exchange Visit Fellowship* to Göttingen, Germany, 2002
- First recipient of the "*Kharkanawala Memorial Award*", Indian Thermal Analysis Society, India, 1980

### **Professional Affiliations**

- Fellow, *Royal Society of Chemistry*, from 2014
- Life Fellow, *Singapore National Institute of Chemistry* from 1999
- Life Fellow, *Indian Chemical Society*, from 2020
- Fellow, *International Association of Advanced Materials*, from 2022
- Member, *American Chemical Society*, 1997 - 2021

- Member, *Materials Research Society (Singapore)*, 2003-2020
- Life member, *Indian Thermal Analysis Society*, from 1979
- Life member, *Indian Association of Solid-State Chemists and Allied Scientists*, from 2001
- Member of International Centre for Diffraction Data, 2007

### **Editorial Board**

- Editorial Board Member, *Journal of Indian Chemical Society* from 2020
- Editorial Advisory Board Member, *Crystal Growth & Design*, 2016-2022
- Editorial Board Member, *Scientific Reports*, 2016-2019
- Associate Editor, *Inorganic and Nano-Metal Chemistry*, 2006-2021
- Member, Editorial Advisory Board, *Int. J. Green Nanotechnol.: Physics & Chemistry*, from 2009-2018
- Member, International Editorial Board of *Main Group Metal Chemistry* 2003-2016
- Member, Editorial Board, *Int. J. Chem.*, 2012-2019
- Member, Editorial Board, *COSMOS*, 2010-2019
- Topic Editor, *Crystal Growth & Design*, 2012-2015
- Member, Editorial Advisory Board, *Current Inorganic Chemistry*, from 2011-2015

### **Books**

- G.R. Desiraju, J.J. Vittal & A. Ramanan, *Crystal Engineering – A Textbook*, World Scientific, 2011
- E.R.T. Tiekink, J.J. Vittal & M.J. Zaworotko (Editors), *Organic Crystal Engineering - Frontiers in Crystal Engineering*, Wiley, 2010
- E.R.T. Tiekink & J.J. Vittal (Editors), *Frontiers in Crystal Engineering*, Wiley & Sons, Ltd., 2006

### **Special Issues of Journals**

- S. Konar, J.J. Vittal (Guest Editors) for the virtual issue of *Structure Property Relationship in Crystalline Solids*, *Cryst. Growth & Des.*, 19(24), November 25, 2019
- S.R. Batten, B. Chen & J.J. Vittal, Special Issue on *Coordination Polymers/MOFs: Structures, Properties and Applications*, *ChemPlusChem*, 81(8) (2016) 669-670
- J.J. Vittal & J. Ellena, *Crystal Growth & Design celebrates the International Year of Crystallography 2014*, *Crystal Growth & Des.*, 15(1) (2015) 2-4
- J.J. Vittal & S.R. Batten, *2014 International year of crystallography celebration: Asia-Pacific*, *CrystEngComm*, 16 (28) (2014) 6276
- Edited a special Issue on the *Chemistry of Nanomaterials* with X. Liu, *COSMOS*, 6(2) December 2010
- Edited a special issue on *Coordination Polymers* with J.N. Moorthy, *J. Molecular Structure*, 796, 30 August 2006



## Major Research Interests

**Supramolecular Chemistry and Crystal Engineering:** Solid-state reactivity and supramolecular transformations, photochemistry of coordination complexes, coordination polymers and MOFs, biomimetic studies, water clusters, solid state properties.

**Advanced Inorganic Materials:** Single molecular precursor routes to various metal-chalcogenide and -oxide bulk materials, films and nanocrystals – Battery and other energy and gas storage materials.

## Research Output

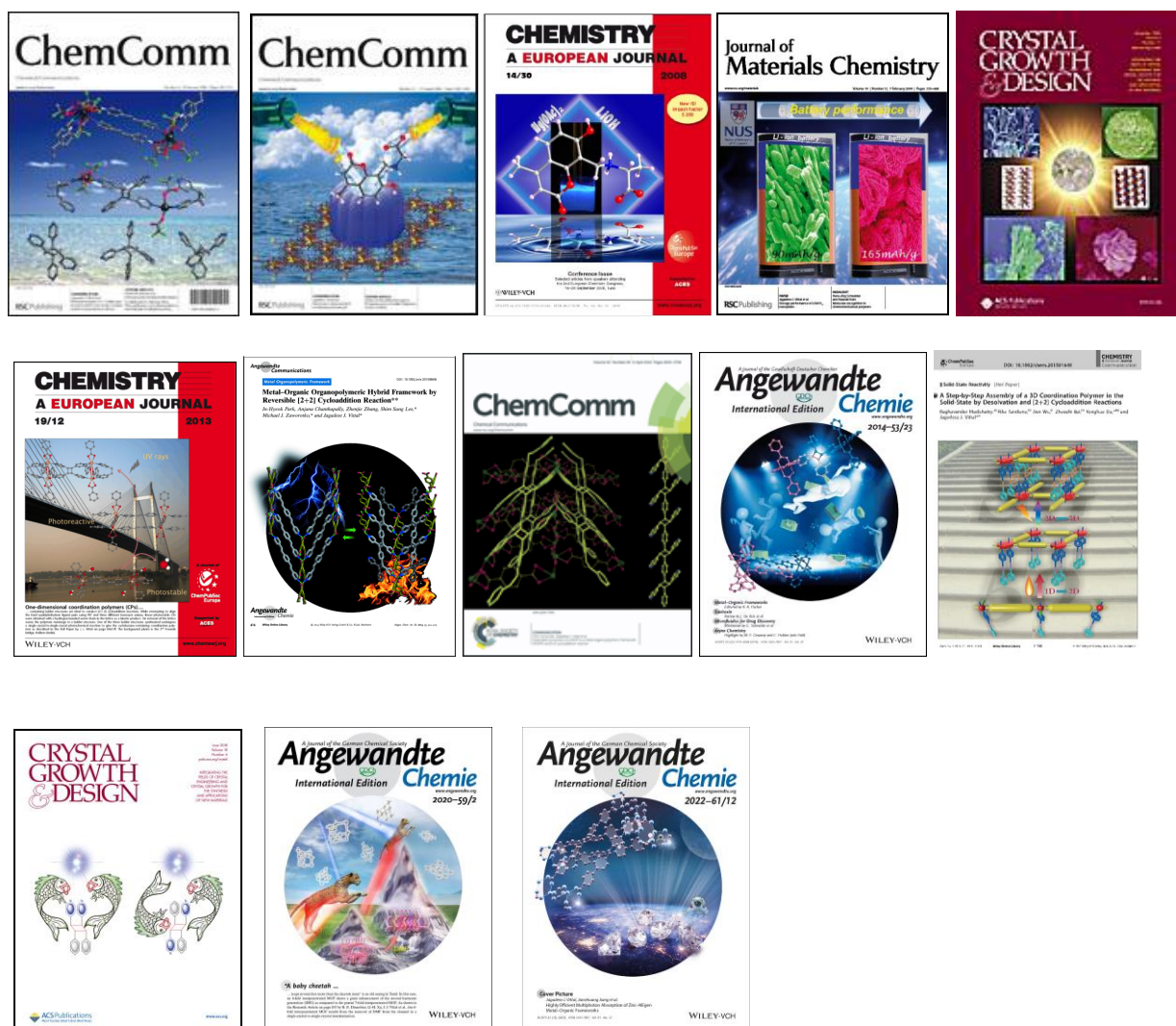
More than 530 international publications, reviews, and chapters, ~250 conference papers and numerous invited, keynote and plenary presentations. Several papers have been highlighted and decorated the cover pages, selected as hot papers and top 10 most accessed by web. Google Scholar Citations: ~28,000 citations and h-index, 83. According to the recent C-score (composite indicator for career-long impact), JJ ranks 57<sup>th</sup> (all citations) & 50<sup>th</sup> (self-citation excluded) out of 57422 researchers listed in the field of Inorganic Chemistry & Nuclear Chemistry, and overall, 12,920<sup>th</sup> out of 655,350 researchers (top 2%) listed in the database, ranked 53<sup>rd</sup> in Singapore, 19<sup>th</sup> at NUS and 2<sup>nd</sup> in the Department of Chemistry, NUS.

## Highlight and Impact on the Research

**Angewandte Author Profile** – Highlight the authors published more than 10 papers in *Angewandte Chemie International Edition*, *Angew. Chem. Int. Ed.* 53(52) (2014) 14302

Cover page illustrations:





## List of Students Supervised

No of PhD Students Supervised – 25

No of MSc Students Supervised - 15

No. of BSc Honours Students Supervised for their final year projects - 52

No of Research Assistants/Associates/Postdocs - 30

No of Part-Time Student Assistants – 15

## High School, Junior College and Undergraduate Students Trained

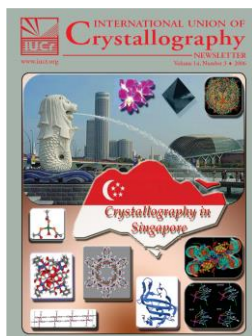
1. *Student Research Programme (SRP)* – ~10 Students from Junior Colleges, since 1998
2. *Science Mentorship Programme (SMP)* – 4 students from Raffles Institution, 2001.
3. *Science Mentorship Programme (SMP)* – 2 students from Nanyang Girls' High School, 2004.
4. *Special Programme in Science (SPS)* – 3 students (with co-supervision of Chin Wee Chong), 2000.
5. *Mentornet Programme*, Hwa Chong Junior College, Singapore – 13 students, 1997-1999.



### Other Professional Activities (from 2001)

- As the local Chair, JJ successfully organized the 16<sup>th</sup> Conference of the Asian Crystallographic Association (AsCA2019) held at the National University of Singapore (17-20 December 2019) along with 4 workshops (15-17 December 2019). This attracted 525 registered participants from 30 countries.
- Established two awards from 2021: The SNIC-AsCA2019 Singapore Award for Solid State Chemistry & Materials and the SNIC-AsCA2019 Distinguished Women Chemist Award from the profit made from the AsCA2019. Each award winner will receive a \$2,000 cash prize and a certificate. The award is presented at the Singapore National Chemistry Meeting (ChnmSG) annually from 2021.
- Singapore National Institute of Chemistry (SNIC) council member, from 2020
- SNIC Fellowship Council member, from 2018 - 2023
- International Panel Member of *IYCr Crystal Growing Competition*, from 2014-2019
- Invited to nominate Nobel Laureate in Chemistry, 2014 & 2015
- One of the Board of Editors, *Crystal Growth & Design Network* by American Chemical Society, 2010 - 2016
- Secretary-Treasurer, *Asian Crystallographic Association*, 2013-2016
- A council member representing Singapore, Malaysia, Bangladesh, Thailand and Indonesia to the *International Union of Crystallography* of the Executive Committee, 2014.
- Founder and Organising Committee member, *Singapore National Crystal Growing Challenge*. Yearly 1997- 2000, & for every two years from 2002–2014. This is one of the most popular outreach activities of the Department of Chemistry and the Faculty of Science. His contribution has been well recognized at the international level. Now he is the advisor and a judge of this event.
- An International Committee Member, *Asian Conference on Coordination Chemistry*, from 2007-2020.
- JJ has been giving popular lecture on ‘*How to be a successful researcher*’ in Singapore, India, China, Canada, and S. Korea for the past several years. This is to motivate the students to do research and to cope up with failure, stress, timeline, and pressure.
- JJ has been very active in promoting crystallographic education and research in Singapore and Southeast Asian countries.
- Executive Committee Member, Materials Research Society (Singapore), 2006-07, 2010-2014
- Singapore representative to the *Council of Asian Crystallographic Association (AsCA)*. 1998 – 2006; 2010-2020.
- Published an article with Prof. K. Swaminathan on ‘Crystallography in Singapore’ for the *International Union of Crystallography (IUCr) Newsletter* (on invitation by the President of

IUCr). This newsletter reaches more than 10000 people all over the world. This has certainly increased the profiles of Singapore, NUS, Faculty of Science, and the Department of Chemistry.



Cover page of the IUCr Newsletter, Vol. 14, No. 3, 2006. For article, see pages 7-16

- One of the judges, *Singapore Science and Engineering Fair* conducted by Singapore Science Centre, March 2005, 2008 & 2009
- One of the judges, Poster session of the *9<sup>th</sup> Youth Science Conference*, Singapore Polytechnic, August 2004
- One of the judges, "*Proposal & Supervision of Scientific Research Project*", SNIC and Department of Chemistry for teachers, March 2002
- One of the Judges, "*Chemistry Communications Challenge*", 2001

## Conferences

- Member, International Scientific Committee, *18<sup>th</sup> Conference of the Asian Crystallographic Association*, Kuala Lumpur, Malaysia, 1-6 December 2024
- As a member of Jury, *8<sup>th</sup> International Invention Innovation Competition in Canada*, iCAN 2023, Toronto, Canada, 26 August 2023
- Organizing member, *Organic Solid-State Chemistry*, in PacifiChem Virtual Meeting 2021, December 16-21, 2021
- Local Chair, *16<sup>th</sup> Conference of the Asian Crystallographic Association*, Singapore, 17-20, December 2019
- Member, International Advisory Body, *55<sup>th</sup> Annual Convention of Chemists and International Seminar 2018 of Indian Chemical Society*, G.B. College, Bhagalpur, India, Dec. 28-30, 2018
- Member, International Program Committee, *15<sup>th</sup> Asian Crystallographic Association Meeting*, Auckland, New Zealand, December 2-5, 2018
- Member, International Advisory Board, *International Symposium on Recent Advances on Molecules and Materials (RA2M-2018)*, Kolkata, India, August 2-3, 2018
- Co-chair, International Program Committee, *14<sup>th</sup> Asian Crystallographic Association Meeting*, AsCA 2016, Hanoi, Vietnam, December 2016

- Organizing member, *Organic Solid-State Chemistry*, in PacifiChem 2015, December 15-20, 2015
- Member, International Program Committee, *13<sup>th</sup> Asian Crystallographic Association Meeting*, Kolkata, India, December 5-8, 2015
- Member, Scientific Committee, *8<sup>th</sup> Singapore International Chemistry Conference, SICC-8*, Singapore, December 14-17, 2014
- Member, International Advisory Committee, *4<sup>th</sup> International Conference – World Science Congress*, Jadavpur University, Kolkata, India, December 16-18, 2014
- Member, International Advisory Committee, *Collaborative Conference on Crystal Growth*, Phuket, Thailand, November 4-7, 2014
- Chair, *Celebrate International Year of Crystallography 2014 (IYCr2014) with crystallographers in Singapore*, NUS, Singapore, August 1, 2014
- Secretary General, *41<sup>st</sup> International Conference on Coordination Chemistry (ICCC41)*, Singapore, July 21-25, 2014
- Member, Academic Advisory Committee, *Pure and Applied Chemistry International Conference (PACCON 2014)*, Khon Kaen, Thailand, from Jan 8- 10, 2014
- Co-Chair, International Program Committee, *Asian Crystallographic Meeting (AsCA'13)*, Hong Kong, December 7-10, 2013
- Member, Scientific Committee, and chairman of the symposium, '*Crystal Engineering of New Materials*', International Conference on Materials for Advanced Technologies, ICMAT-2013, 30 June - 6 July 2013
- Co-organizer, *2<sup>nd</sup> China-India-Singapore Symposium on Crystal Engineering*, November 19 – 23, 2012, in Guangzhou, China
- Co-Chair, Organizing Committee, *Mini-Symposium on NanoBio and Supramolecular Materials*, GNU, Jinju, Nov. 4, 2010
- Organizing Committee member, *1<sup>st</sup> International Collaborative and Cooperative Chemistry Symposium*, NUS, November 15-16, 2010
- Member, International Program Committee, *Asian Crystallographic Association Meeting, AsCA'10*, Busan, Korea, Oct. 31-Nov.3, 2010
- Organizer, *First China-India-Singapore Symposium on Crystal Engineering*, NUS, July 30-August 2, 2010
- Organizer, *NUS – University of Hyderabad Bilateral Chemistry Symposium*, Singapore, Dec. 14-15, 2009
- Coordinator, *Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-5)*, University of Hyderabad, India, February 20-21, 2009



- Co-chair in a Microsymposium 'Design and applications of nanoscale materials', *XXI International Union of Crystallography Congress*, Osaka, Japan, August 23-31, 2008
- Organizing Committee Member, *3<sup>rd</sup> MRS-S Conference on Advanced Materials*, 2008, IMRE, Singapore, February 25-27, 2008
- An international Committee Member, *First Asian Conference on Coordination Chemistry (ACCC-1)*, Okazaki, Japan, July 29 – August 2, 2007; ACCC-2, Beijing, 2009 and ACCC-3, New Delhi, Oct. 17-21, 2011
- Session Chair, *Molecular & Nanoscale Metal Clusters Symposium*, NUS, Singapore, May 10, 2007
- A scientific committee member and chairman of the symposium, 'New routes to inorganic materials, films and nanocrystals' for the International Conference on Materials for Advanced Technologies, ICMAT-2007, July 1-6, 2007
- International Advisory Committee Member *International Conference on Nano-Materials for Electronics*, Centre for Materials for Electronics Technology, Pune, India, November 27-29, 2006
- Session Chair, *Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-4)*, NUS, Singapore, February 20-21, 2006
- A member of the Scientific Program Committee, *Singapore International Chemical Conference-4. Frontiers in Chemical Design and Syntheses (SICC-4)*, Singapore, December 8-10, 2005
- Coordinator, *Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-3)*, IIT Kanpur, India, December 16-18, 2004
- Program Committee Member, *Asian Crystallographic Association meeting (AsCA04)*, Hong Kong University of Science & Technology, Hong Kong, China, June 27-30, 2004
- A scientific committee member, *International Conference on Materials for Advanced Technologies (ICMAT 2003)* and 7<sup>th</sup> International Union of Materials Research Society (ICA 2003), Singapore, December 7-12, 2003
- Chairman of the symposium, 'New Materials by Crystal Engineering Design' at ICMAT, Singapore, December 7-12, 2003
- Coordinator, *Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-2)*, IIT Bombay, India, November 7-8, 2003
- Organizer, *Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-1)*, Singapore, December 3-4, 2002
- Member, Scientific Program Committee, *Singapore International Chemical Conference-2. Frontiers in Chemical Design and Syntheses*, Singapore, December 18-20, 2001
- International Program Committee member, *3<sup>rd</sup> Conference of the Asian Crystallographic Association conference*, AsCA98, Kuala Lumpur, Malaysia, October 13-15, 1998

## Selected Invited Talks and Chaired Scientific Sessions

- 1<sup>st</sup> Lecture for Saturday Seminar Series: Light as Reagent and Product, A virtual weekly seminar series, Miami University, USA, September 7, 2024
- Invited Speaker, Frontiers Symposium in Chemistry (FS-CHM 2024) IISER-TVM, Thiruvananthapuram, India, January 19-21, 2024
- Plenary Speaker, *2<sup>nd</sup> World Symposium on Material Sciences and Engineering*, Intercontinental, Singapore, November 8-10, 2023
- Plenary Speaker, *Symposium on Analytical Science and Technology in Inorganic Chemistry*, Chungnam National University, Daejeon, S. Korea, October 6, 2023
- Plenary Speaker, *Current Trends in Advanced Functional Materials* (hybrid), Saranathan College of Engineering, Tiruchirappalli, India 26-27, September 2023
- Plenary Award Lecture, *Annual Meeting on Photochemistry 2023*, by the Japanese Photochemistry Association, Hiroshima, Japan, September 5-7, 2023
- Plenary Speaker, *International Symposium on Emerging Trends in Chemical Sciences*, Northeast Hill University, Shillong, Meghalaya, India, March 2-4, 2023
- Keynote Speaker, *Modern Trends in Inorganic Chemistry XIX*, Banaras Hindu University, Varanasi, India, December 15-17, 2022
- Plenary Lecture, *ASEAN-India Crystallographic School*, Shiv Nadar University, November 14-18, 2022
- Advanced Materials Lecture, *Advanced Materials World Congress (Hybrid)*, Stockholm, Sweden, October 11-14, 2022
- Inaugural opening address of the virtual *Young Scientist Conclave (YSC-2022) and Research Scholars Competition (RSC-2022)* organized by the Indian Chemical Society, July 30, 2022.
- IAAM Fellowship Award Lecture and chaired a session, *12<sup>th</sup> Advanced Materials Congress*, Cruise Conference, Abu Dhabi, UAE March 5-12, 2022. Vid. Proc. Adv. Mater., Volume 3, Article ID 2203261, (2022) <https://www.proceedings.iaamonline.org/article/vpoam-2203261>
- Opening speaker, *Organic Solid-State Chemistry*, in PacifiChem, Hawaii, Virtual Meeting 2021, December 16-21, 2021
- Invited speaker (virtual), *4<sup>th</sup> International Symposium on Photofunctional Chemistry of Complex Systems (ISPCCS2020)* joint with *3<sup>rd</sup> International Symposium on Soft Crystals (3<sup>rd</sup> ISSC)* and *IIS U Tokyo Symposium*, in Kona, Hawaii, December 11-14, 2021
- Plenary speaker, 48<sup>th</sup> National Seminar on Crystallography, IIT-Roorkee, Hybrid Conference, India, November 25-27, 2021
- Opening speaker, Perspectives on structural inorganic chemistry: Crystal engineering approaches, Virtual meeting, IIT-Delhi, India, October 30, 2021

- Award Lecture, 57<sup>th</sup> Annual Convention of Chemists by Indian Chemical Society, Virtual Conference, India, December 26-29, 2020
- Session Chair, Crystal Engineering: From Molecules to Crystal, Virtual Conference, India, October 19-20, 2020
- Closing ceremony speech and prize awarding ceremony, 3<sup>rd</sup> Chemistry National Meeting Singapore, ChnmSG3 2020, Virtual Meeting, Singapore September 9-10, 2020
- Award Lecture, 26<sup>th</sup> Chemical Research Society of India - National Symposium in Chemistry, (CRSI-NSC-26), VIT Vellore, India, February 7-9, 2020
- Keynote speaker & chaired a session, 7<sup>th</sup> Asian Conference on Coordination Chemistry, Kuala Lumpur, Malaysia, October 15-18, 2019.
- Opening Keynote speaker, Advanced Materials Research Conference (AMRC 2019), Singapore, September 26-27, 2019
- Invited speaker, 1<sup>st</sup> Chemistry National Meeting Singapore, Singapore, May 15, 2019.
- Invited speaker, 15<sup>th</sup> Conference of the Asian Crystallographic Association, Dec. 2-6, 2018, Auckland, New Zealand, Dec. 2-6, 2018
- Keynote speaker, Main-group Molecules to Materials Meeting, Bangalore, India, October 28-31, 2018
- Plenary speaker, 2<sup>nd</sup> Southeast Asia Conference on Crystal Engineering (SEACCE-2), Kuala Lumpur, Malaysia, August 6-8, 2018
- Keynote speaker, International Coordination Chemistry Conference (ICCC2018), Sendai, Japan, July 30-August 4, 2018
- Invited Speaker, 2018 Meeting of the American Crystallographic Association, Toronto, July 20-24, 2018
- Keynote Speaker, 11<sup>th</sup> Global Experts Meeting on Chemistry and Computational Catalysis, Singapore, May 18-19, 2018
- Plenary Speaker, International Conference on Advancements and Challenges in Chemical Sciences, Pachiappa's College, Chennai, India, February 2, 018
- Keynote speaker, 4<sup>th</sup> Japan-Taiwan-Singapore-Hong Kong Quadrilateral Symposium on Coordination Chemistry, Hong Kong, December 10-12, 2017
- Invited Speaker, 43<sup>rd</sup> Congress on Science and Technology of Thailand, Bangkok, Thailand, October 17-19, 2017
- Invited Speaker, *Crystallography and Society*, a satellite meeting of IUCr 2017, Pune, August 29-30, 2017
- Keynote speaker, XXIV Congress and General Assembly of the International Union of Crystallography (IUCr2017), Hyderabad, India, August 21-28, 2017, [https://www.youtube.com/watch?v=rgdBjFOpuc&ab\\_channel=IUCr2017Archives](https://www.youtube.com/watch?v=rgdBjFOpuc&ab_channel=IUCr2017Archives)

- Keynote speaker, 6<sup>th</sup> Asian Coordination Chemistry Conference (ACCC6), Melbourne, Australia, July 23-28, 2017
- Plenary speaker, 3<sup>rd</sup> *Singapore Inorganic Chemistry Symposium (SICS 2017)*, Singapore, July 14, 2017
- Plenary speaker, 2<sup>nd</sup> *World Chemistry Conference*, Toronto, Canada, August 8-10, 2016
- Plenary speaker, *The third Crystal Engineering and Emerging Materials Workshop of Ontario and Quebec (CEMWOQ-3)*, Windsor, Canada, May 14-15, 2016
- Keynote speaker, *the 30<sup>th</sup> Conference of the Society of Crystallographers in Australia and New Zealand (SCANZ Crystal 30)*, Hobart, Tasmania, Australia, March 29-April 1, 2016
- Keynote speaker, *IUPAC-2015*, Busan, Korea, August 9-14, 2015
- Keynote speaker, *RSC International Symposium on Mechanochemistry*, Hefei, China, June 6-7, 2015
- Keynote speaker, 8<sup>th</sup> *Singapore International Chemistry Conference*, Singapore, Dec. 14-17, 2014
- Invited speaker, 3<sup>rd</sup> *China-India-Singapore Conference on Crystal Engineering*, Bangalore, India, Dec. 8-10, 2014
- Invited speaker, *International Conference on Structural and Inorganic Chemistry*, Pune, Dec. 4-5, 2014
- Invited speaker, *International Conference on Structural Chemistry of Molecules and Materials*, Kolkata, Nov. 30 – Dec. 2, 2014
- Invited Speaker, 23<sup>rd</sup> *Congress and general Assembly of the International Union of Crystallography*, Montreal, Canada, August 5-12, 2014 (gave two invited talks)
- Invited Speaker, *Gordon Research Conference*, Waterville, NH, USA, June 1-6, 2014
- Invited Speaker, 19<sup>th</sup> *National Symposium & Workshop on Thermal Analysis (THERMANS-2013)*, BARC, Mumbai, India, December 19-23, 2013
- Invited Speaker, *Asian Crystallographic Meeting (AsCA'13)*, Hong Kong, December 7-10, 2013
- Invited Speaker, *Fourth International Collaborative and Cooperative Chemistry Symposium (ICCCS-4)*, IIT- Kanpur, India Oct. 25-26, 2013
- Special Lectures, Department of Chemistry, Gyeongsang National University, Jinju, S. Korea, May 29 and February 28, 2013
- Guest Lecture, Graduate School Award Celebrations, Gyeongsang National University, Jinju, S. Korea, February 25, 2013

- Invited Speaker, *Chemistry: Synthesis, Structure & Dynamics – A Conference on Crystal Engineering*, Coorg, India, December 11-14, 2012
- Invited Speaker, *AsCA 12/Crystal 28 and Bragg Centennial Symposium*, Adelaide, Australia, December 2-6, 2012
- Invited Speaker, *4<sup>th</sup> Dalton Transactions, International Symposium – Organometallic Chemistry and Catalysis*, IMRE, Singapore, November 5, 2012.
- Invited Speaker, *Third International Collaborative and Cooperative Chemistry Symposium (ICCCS-3)*, Hangzhou, China, Oct. 31-November 1, 2012.
- Special Lecture, Department of Chemistry, Gyeongsang National University, Jinju, S. Korea, July 24, 2012
- Discussion leader, *Gordon Research Conference on Crystal Engineering*, New Hampshire, USA, June 10-15, 2012.
- Opening Plenary Speaker, *Crystal Engineering Symposium in Honour of Emeritus Prof. Roger Bishop*, University of New South Wales, Sydney, Australia, Nov. 21, 2011.
- Keynote speaker, *3<sup>rd</sup> Asian Conference on Coordination Chemistry*, New Delhi, India, Oct. 17-20, 2011
- Invited speaker, *International Conference on the Chemistry of the Organic Solid State XX*, Bangalore, India, June 26-30, 2011
- Invited speaker, *Scientific Symposium*, Bruker Singapore, May 25, 2011
- Guest speaker, *Inaugural YJC Crystal Growing Challenge 2011*, Yishun Junior College, April 2, 2011
- Invited talks, *Pacificchem 2010*, Hawaii, USA, December 15-20, 2010
- Guest Lecture, *Graduate School Award Celebrations*, Art, Concert Hall, Gyeongsang National University, Jinju, S. Korea, Oct. 22, 2010
- Invited talk, *New Trend in Functional Molecules*, Yonsei University, Seoul, Oct. 16, 2010
- Invited talk, *Korean Chemical Society, Inorganic Chapter Meeting*, Suncheon National University, Suncheon, Oct. 8, 2010
- Invited talk, *Distinguished Lecture Series*, Department of Energy Science, Sungkyunkwan, Suwon, S. Korea Sept. 24, 2010
- Invited talk, *4<sup>th</sup> MRS-S Conference on Advance Materials*, IMRE, Singapore March 17-19, 2010
- Invited talk, Division of Chemistry and Biological Chemistry, Nanyang Technological University, Singapore, March 10, 2010

- Invited speaker, *NUS-SNU Joint Symposium*, NUS, Singapore, March 5, 2010
- Keynote Speaker and chaired a scientific session, *6<sup>th</sup> Singapore International Chemical Conference*, Singapore, December 15-18, 2009
- Invited Speaker, *Korean Battery Society Annual Meeting, Kumoh National Institute of Technology*, Gumi, S. Korea, November 26-27, 2009
- Invited Speaker, *The 104<sup>th</sup> National Meeting of the Korean Chemical Society Meeting*, Daejeon, S. Korea, October 28-30, 2009
- Invited opening talk, *International Symposium on Advanced Functional Materials, Department of Materials Engineering*, Gyeongsang National University, Jinju, S. Korea, October 16, 2009
- Invited talk, *Joint Conference of the Asian Crystallographic Association and Chinese Crystallographic Society*, Beijing, China, October 22-25, 2009
- *Distinguished Scholar Invitation Lecture*, BK21 Graduate School for Molecular Materials and Nanochemistry, Gyeongsang National University, South Korea, January 2009
- Opening speaker, *2<sup>nd</sup> International Symposium on Materials Science*, in Bhabha Atomic Research Centre, Mumbai, India, Dec. 2-6, 2008
- Plenary speaker, *18<sup>th</sup> International Symposium on Fine Chemistry and Functional Polymers and IUPAC 4<sup>th</sup> International Symposium on Novel Materials and their synthesis*, Zhejiang, China, October 15-18, 2008
- Invited speaker, *235<sup>th</sup> ACS National Meeting* in New Orleans, Louisiana, USA, April 6-10, 2008
- Invited speaker, *12<sup>th</sup> Modern Trends in Inorganic Chemistry*, IIT-Madras, Chennai, December 6-8, 2007
- Invited speaker, *First Asia Science Forum*, Tohoku University, Sendai, Japan, September 10-11, 2007
- Keynote speaker, *12<sup>th</sup> Asian Chemical Congress*, Putra World Trade Centre, Kuala Lumpur, Malaysia, August 23-25, 2007
- Keynote speaker, *1<sup>st</sup> Asian Conference on Coordination Chemistry*, Okazaki Conference Center, Aichi, Japan, July 29-August 2, 2007
- Invited speaker, *The first BK21 International Symposium on Molecular Materials and Nanochemistry*, Gyeongsang National University, Jinju, S. Korea, February 23-24, 2007
- Plenary speaker, *2<sup>nd</sup> Mathematics and Physical Sciences Graduate Congress*, NUS, Singapore, December 12-14, 2006
- Invited speaker, *International Conference on Nanomaterials for Electronics*, Centre for Materials for Electronics Technology, Pune, India, November 27-29, 2006



- Invited speaker, *7<sup>th</sup> Frontier Science Symposium*, Taipei, Taiwan, November 23-26, 2006
- Plenary speaker, *8<sup>th</sup> International Symposium on Biotechnology, Metal Complexes and Catalysis (BMC-VIII)*, Haikou, China, November 6-9, 2006
- Invited speaker, *9<sup>th</sup> Eurasia Conference on Chemical Sciences (EuAsC<sub>2</sub>S-9). Innovations in Chemical Biology at the Bridge of Eurasia*, Antalya, Turkey, September 9-13, 2006
- Keynote Speaker, *37<sup>th</sup> International Conference on Coordination Chemistry ((ICCC-37)*, Cape Town, South Africa, August 13-18, 2006
- Invited speaker, *Second MRS-S Conference on Advanced Materials*, Materials Research Society (MRS) of Singapore & Institute of Materials Research and Engineering, Singapore, January 18-20, 2006
- Invited Speaker, *6<sup>th</sup> Frontier Science Symposium*, Faculty of Science, NUS, Singapore, November 8-9, 2005
- Plenary speaker and a scientific session chair, *4<sup>th</sup> National Symposium and Conference on Solid State Chemistry and Allied Areas*, Goa University, Goa, India, December 1-3, 2005
- Invited speaker, *MRS-S Conference on Advanced Materials*, Materials Research Society (MRS) of Singapore & Institute of Materials Research and Engineering, Singapore, August 6, 2004
- Invited speaker, *6<sup>th</sup> Asian Crystallography Meeting (AsCA04)*, Hong Kong University of Science & Technology, Hong Kong, China, June 27-30, 2004
- Invited speakers, *First Chemistry - IMRE Joint Symposium 2002*, September 10, 2002
- Invited speaker and chaired a scientific session, *National Conference & Symposium on Solid State Chemistry and Allied Areas (NCSCA 2001)*, IIT Kanpur, India, December 6-8, 2001
- Speaker and chaired a scientific session, *Singapore International Chemical Conference II - Frontiers in Chemical Design and Synthesis*, Singapore, December 18-20, 2001
- Invited speaker, Microsymposium, *Crystal Engineering at the IV Meeting of Asian Crystallographic Association*, IISc, Bangalore, India 18-21 November 2001
- Invited speaker, *30<sup>th</sup> Annual Session of the Institute of Chemistry*, represented Singapore National Institute of Chemistry and gave an invited talk, Colombo, Sri Lanka, June 20-21, 2001
- **Other Talks:** Fuzhou University (2024), IISER-Trivandrum (2024), IIT-Bhilai, India (2023), Ewa Womans University, S. Korea (2023), Kyoto University, Japan (2023), Tokyo Institute of Technology, Japan (2023), Tokyo University, Japan (2023), IIT-Guwahati, India (2023), IISER-Kolkata (2023), Alia University, Kolkata (2023), Beijing Institute of Technology, China, Virtual (2022), Fuzhou University, China (2019), Max Plank Institute, Stuttgart, Germany (2018), Universität Würzburg, Germany (2018), University of Reading Malaysia (2017), McGill University, Canada (2016), York University, Canada (2016), University of Toronto, Canada (2016), Wilfred Laurier University, Waterloo, Canada (2016), University of

British Columbia, Canada (2015), Simon Fraser University, Canada (2015), University of Alberta, Canada (2015), University of Calgary (2015), University of Lethbridge, Canada (2015), Pune University (2014), NISER-Bhubaneswar (2014), IIT-Bhubaneswar (2014), University of Hyderabad (2014), IIT-Bombay, India (2013), IIT-Indore (2013, IISER-Bhopal (2013), IIT-Kharagpur, India (2013), Kolyani University, India (2013), Jadavpur University, India (2013), IISER-Kolkata, India (2013), IIT-Delhi, India (2012), University of Calicut, India (2011), Cochin University of Science & Technology, India (2011), University of Kerala, Trivandrum, India (2011); SPMS, Nanyang Technological University, Singapore, March, 2010; Gyeongsang National University, Jinju, S. Korea September, 2009; Chonbuk National University, Geonju, S. Korea, September, 2009; Kumoh National Institute of Technology, Gumi, S. Korea, September, 2009; Chonnam University, Gwangju, S. Korea, September, 2009; Korea University, Seoul, S. Korea, November, 2009; Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore, April, 2009; Indian Institute of Science, Bangalore, April, 2009, University of South Florida, January, 2009; IIT-Delhi, February, 2008; University of Western Ontario, June, 2008; University of Texas at San Antonio, USA, June, 2007; Northern Illinois University, USA, June, 2005; University of Göttingen, Germany, June, 2002; University of Manchester, UK, December, 2002; University of Hyderabad, University of Madras, IITs at Chennai and Delhi in November and December 2001; The Royal Society of Chemistry, London (North India Section), University of Delhi, Delhi, India, December 11, 2001; The University of Western Ontario, London, Canada, August 11, 2000.

#### **External Reviewer:**

- Grant proposal for *National Science Center*, Poland, 2023
- External Assessor for Promotion, Universiti Putra Malaysia, 2023 & 2024
- Grant proposals for *Research Grants Council of Hong Kong*, Hong Kong, 2009 - 2023
- Book proposals – World Scientific, 2021; RSC Monograph, 2020; Elsevier, 2019
- Reviewer of a candidate for Bhatnagar Award, India, 2020
- Reviewer for grant proposals, Research and Development Agency of the Science, Technology, Chile, 2019, 2020
- Review Board Member, Grant Proposal - Chemistry of Synthetic Two-Dimensional Materials, proposal submitted by Technische Universität Dresden, Germany, 2020
- Reviewer for Canada Research Chair, Tier 1, Canada, 2020
- Review Board Member, Grant Proposal - Coordination Networks: Building blocks for Functional Systems, Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), Munich, Germany, 2019
- Reviewer for syllabus validation of chemistry modules, PSGR Krishnammal College for Women, Coimbatore, Tamil, India, 2019
- Panel Member of Grants, Clusters of Excellence grant proposal, Deutsche Forschungsgemeinschaft (DFG, German Research Foundation), Munich, Germany, 2018
- Reviewer of a candidate for the headship, KHUST, Hong Kong, 2018, 2021
- Reviewer for Steacie Prize, National Research Council, Canada, 2018
- Reviewer of a grant proposal for the National Science Center, Poland
- Promotion of a candidate for professorship, School of Chemistry, Monash University, Australia, 2017
- Promotion of a candidate for professorship, IIT Kanpur, India, 2017
- Invited to nominate a candidate for various medals of Chemical Institute of Canada, 2016-
- Invited to nominate a candidate for Outstanding Emerging Researchers, McGill University, 2016
- Grant proposal for *American Chemical Society Petroleum Research Fund*, USA, 2015
- External reviewer for promotion and tenure at McGill University, 2015

- Reviewer of a textbook proposal on Gas Separation and Storage in MOFs for CRC Press, 2015
- Reviewer for promotion of a faculty, The University of Nottingham, Malaysia Campus, 2015
- Reviewer of candidates for *TIFR*, Hyderabad, 2012-13
- Reviewer of a candidate for *Venezuelan Institute of Scientific Researches (IVIC)*, Caraca, Venezuela, 2012, 2018
- Grant proposal for *National Research Foundation of Korea*, S. Korea, 2011
- Reviewer of a candidate for promotion to Professorship, Universiti Brunei Darusslam, 2011
- Grant proposal for *King Fahd University of Petroleum & Minerals*, Saudi Arabia, 2013, 2015
- Grant proposal for *National Scientific & Engineering Research Council*, Canada, 2010
- Grant proposal for *American Chemical Society Petroleum Research Fund*, USA, 2008, 2015
- Grant proposal for *Israel Science Foundation (ISF)*, 2008
- Grant proposal for *King Fahd University of Petroleum & Minerals*, Saudi Arabia, 2007, 2008, 2009
- Grant proposals for *Czech Science Foundation*, 2003, 2005, 2007, 2011 and 2015
- Expert reviewer of *South African Research Chairs Initiatives (SARCI)* funded by the National Research Foundation, South Africa, 2015 and 2006
- Reviewer of a candidate for *TWAS-2008 prize*, Third World Academy of Science, 2008
- Reviewer of a candidate for promotion of a staff member, Indian Institute of Science, 2008
- Reviewer of a candidate for *Bhatnagar Prize*, the most prestigious award in science, India, 2008
- Reviewer for the renewal of *Canada Research Chair*, Simon Fraser University, Canada, 2009
- Reviewer of a candidate for *National Research Foundation*, South Africa, 2009
- Reviewer for a candidate for promotion at University of Missouri, Columbia, 2010, 2011
- Expert reviewer of *South African Research Chairs Initiatives (SARCI)* funded by the National Research Foundation, South Africa, 2011.

**Member of Board of Examiners of External MSc and PhD Theses:** Bharatiar University (PhD -1999, 2001, 2002 & 2006); Bharathidasan University (PhD – 2002 & 2006); Banaras Hindu University (PhD - 2002); Madras University (PhD - 2004); University of Hyderabad (PhD – 2005); Pune U (PhD – 2020); Tezpur University (PhD – 2023); IIT Bombay (PhD - 2004); IIT Kharagpur (PhD – 2012 & 2015), IIT-Kanpur (PhD – 2006, 2008, 2010, 2013, 2014, 2016, 2017, 2020 and 2020a); IISc (PhD – 2018); IIT Madras (PhD – 2007); IIT Guwahati (PhD – 2020); IIT Dhanbad (PhD – 2021); Monash U (PhD – 2019); Univ. Sydney (PhD – 2022); Adelaide University (MSc - 2001); University of Melbourne (MSc – 2005); University of New South Wales, Australia (PhD – 2007, 2010, 2011 & 2013); University of Stellenbosch, South Africa (PhD - 2012); University of Malaya, KL (PhD – 2015 & 2019); Department of Preventive Dentistry, Faculty of Medicine, NUS (MSc - 2003); Department of Chemical & Biomolecular Engineering, NUS (PhD – 2008); National Institute of Education, NTU, Singapore (PhD - 2007); Nanyang Technological University, Singapore (PhD, 2015, 2020 and 2020a).

**Reviewer for International Journals:**

Receiving a number of invitations annually from various journals like Science, Nature, Nature Chemistry, Nature Communications, Angewandte Chemie, IUCrJ, Chemistry – A European Journal, European Journal of Inorganic Chemistry, Journal of Chemical Education, Journal of American Chemical Society, Inorganic Chemistry, Chemistry of Materials, Crystal Growth & Design, Langmuir, Chemical Communications, Dalton Transactions, New Journal of Chemistry, Canadian Journal of Chemistry, Journal of Solid State Chemistry, Inorganica Chimica Acta, Inorganic Chemistry Communications, Journal of Molecular structure, Journal of Organometallic Chemistry, Polyhedron, Monatshefte fur Chemie, Solid State Sciences, Synthesis and Reactivity in Inorganic, Metal-Organic and Nano-Metal Chemistry, Bioinorganic Chemistry & Applications, Coordination Chemical Reviews, Journal of Applied Organometallic Chemistry, Journal of

Inorganic & Organometallic Polymers & Materials, Austr. J. Chemistry, Acta Crystallographica Sections C & E, Journal of Chemical Crystallography, International J. of Environ. & Pollution, Advanced Functional Materials, Chemistry – A Asian Journal, Journal of Organic Chemistry and Zeitschrift fuer Kristallographie.

## **SERVICE**

### **Department of Chemistry, NUS**

- Director, *Chemical, Molecular and Materials Analysis Center*, 2011- 2015
- Chair, *Administrative & Technical Staff Committee*, NUS, 2011- 2015
- Member, *Management Council*, Department of Chemistry, NUS, 2009-2020
- *Manager, X-Ray Diffraction Laboratory* 1997-2005. Managing the facility with a Research Technologist and a part-time X-ray crystallographer. Providing my service and expertise to more than 16 staff members of the Chemistry Department and many academic institutions outside Singapore.
- Chairman, *Graduate Committee*, 2003-2005; Member, 1997-2015
- Chair (2017-2018) and a Member, *Tenure & Promotion*, 2011-2018
- Member, *Search Committee*, 2008-2009 and 2013-2015; Deputy Chair, *Search Committee*, 2010-2012
- Chair of several *Department Evaluation Committee* for the promotion to full professorship, 2009-2014
- Member, *Safety, Security & Health, Department of Chemistry*, NUS, 2012-2013
- Member, Committee for the Annual staff appraisal, 2008-09
- Co-chair *Safety and Space Committees*, 2005
- A member of the *Safety, Security & Health Committee*. From 2001-2010
- Chairman, *PhD Oral Examination Committee*, 2003-2005 chaired more than 50 oral exams
- Deputy Chairman, *Teaching Assistantship & Support*, 2001-2005

### **Faculty of Science, NUS**

- Assistant Dean (*Research and Graduate Programs, Space & Infrastructure*), Faculty of Science, 2007-2010
- Chairman, *Faculty Space and Evaluation Committee* 2008-2010
- A leading member of the team to draft initial plan for the *New Wet Science Building*, Faculty of Science, 2009
- Member, *Faculty Tenure and Promotion Committee (Senior)*, 2009-2010
- Coordinator of the Road show to promote the awareness of the Graduate Research Program of the Faculty of Science in Indian Universities in Kolkata and Chennai, Feb. 2006
- Member, *Faculty Research Committee*, 2005-2006
- Member, the *Executive Committee for Research and Graduate Studies*, Faculty of Science, from 2003-2005
- Faculty of Science Graduate/Honours Orientation Training talks, 2006, 2007
- Open House, Faculty of Science, 2007 & 2008

- Member, Crisis-Management Committee, Faculty of Science, 2005-2006
- Promoting NUS-Chemistry: Talks on "Opportunities for Graduate Studies in Chemistry at NUS" in Colombo, Sri Lanka (June 2001) and several leading universities in India including Bangalore University, University of Hyderabad, University of Madras, Anna University, Delhi University, Indian Institute of Technology at Chennai, Kanpur and New Delhi in November and December 2001, to advertise NUS Chemistry department and to attract the best students in India and Sri Lanka. Bharathidasan University, Tiruchirappalli, India, Dec. 2007; Delhi University, IIT – Delhi & Kharagpur, Feb. 2008; IIT-Delhi (2012); IIT-Kharagpur (2013), Kalyani University, India (2013), Jadavpur University, India (2013), IISER-Kolkata, India (2013), IIT-Bombay (2013), NISER-Bhubaneswar (2014), IIT-Bhubaneswar (2014) and University of Hyderabad (2014)
- Interviewed graduate students for the Faculty Graduate Program, in India, August 1998, 2007-2011
- Academic Mentor, Faculty of Science 1997 – 2005
- Organizer, *Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-1)*, Singapore, 2001- 2006
- Member, Scientific Program Committee in several *Singapore International Chemical Conference*

## NUS

- Advisor, Americas Sections, *Undergraduates Exchange Program*, International Relations Office, NUS, 2005-2007
- Member of Tier 2 Research proposal evaluation committee several times on ad hoc basis.
- University Open House, several times
- Participated at the annual convocation several times, 1997-2013

## Professional activities

- Founder and Organising Committee member, *Singapore National Crystal Growing Challenge*. Yearly 1997- 2000, & for every two years from 2002–2014. This is one of the most popular outreach activities of the Department of Chemistry and the Faculty of Science. His contribution has been well recognized at the international level. He was the advisor and a judge of this event since his retirement.
- As the local Chair, JJ successfully organized the 16<sup>th</sup> Conference of the Asian Crystallographic Association (AsCA2019) held at the National University of Singapore (17-20 December 2019) along with 4 workshops (15-17 December 2019). This attracted 525 registered participants from 30 countries.
- Established two awards: The SNIC-AsCA2019 Singapore Award for Solid State Chemistry & Materials and the SNIC-AsCA2019 Distinguished Women Chemist Award from the profit made from the AsCA2019. Each award winner will receive a \$2,000 cash prize and a certificate. The award will be presented at the Singapore National Chemistry Meeting (ChnmSG) annually from 2021. The two award winners are from NUS this year. Trying to establish similar awards for the Asian Crystallographic Association at the Asia level.
- Singapore National Institute of Chemistry (SNIC) council member, from 2020
- SNIC Fellowship Council member, from 2018

- Singapore representative to the *Council of Asian Crystallographic Association (AsCA)* 1998 – 2006; 2010-till now
- He highlighted about Crystallography in Singapore for the *International Union of Crystallography (IUCr)* Newsletter (on invitation by the President of IUCr). This newsletter reaches more than 10,000 people all over the world. This has increased the profiles of Singapore, NUS, Faculty of Science, and the Department of Chemistry.
- International Panel Member of *IYCr Crystal Growing Competition*, from 2014
- JJ is one of the founding members of *Chapter of Singapore Crystallographers* in the Singapore National Institute of Chemistry
- JJ has been very active in promoting crystallographic education and research in Singapore and Southeast Asian countries. JJ helped in celebrating International Year of Crystallography (IYCr2014) in countries like Malaysia, Thailand, Indonesia, and Fiji Island. He summarized his efforts of promoting crystallography in Asian countries in one of the invited talks at the satellite meeting of IUCr Congress in Hyderabad in 2014.
- JJ has been giving popular lecture on ‘How to be a successful researcher’ in Singapore, India, Canada, China, and S. Korea for the past several years. This is for the students to get motivated to do research and to cope with failure, stress, timeline, and pressure.
- Organized many symposia under ICMAT conferences
- Executive Committee Member, Materials Research Society (Singapore), 2006-07, 2010-2014

### Teaching

- Online one-month Summer Course on Crystal Engineering – Beijing Institute of Technology, China, July-August 2022
- Crystal Engineering (2 weeks course) – IIT-Bhilai, India sponsored by Global Initiative of Academic Networks (GIAN), MHRD, Government of India, November 13-24, 2023
- X-ray Crystallography (short course) – IIT-Bhillai, India, November 20-25, 2023.
- Solid-State Chemistry (3 credit course) – IISER-Trivandrum, Jan.-Feb. 2024 (shared 0.5 course)
- Crystal Engineering (2 credit course) – IISER-Trivandrum, Jan.-Apr. 2024

### Formal Lectures at NUS

- CM2111 – *Inorganic Chemistry* – Class size of 160. 2017-2018.
- CM5212 – *Crystal Engineering* – Class size of 15-40 students. 2014 – 2020. JJ developed this module
- FMSC1207C – *Gemstones, Minerals and Rocks* – Freshmen Seminar, Faculty of Science. Max. Class size of 15 students. 2012 – 2018. JJ developed this module
- CM5241 – *Modern Analytical Techniques* (Elective module with 25-50 graduate students) - with Professors Sam Li and Lee Hian Kee, 1997 and 1998.
- CM5243 – *X-Ray Crystallography – A Practical Approach* (Elective module) Class strength, 30-60 students. The course was developed by JJ and taught every year from 1999 until 2014.



- CM4214 – *Structural Methods in Inorganic Chemistry* (Elective module with 25-50 graduate students). With Professors Leung Pak Hing and Mok Kum Fun (1997 & 1998). Class size, 25-35 students. This includes tutorial sessions. Taught the full module independently every year from 1999 to 2003 and again from 2005. JJ revamped this in 1999.
- CM2111 – Co-teaching *Inorganic Chemistry* (Essential Module with ~200 undergraduate students). 1997-1999, 2006, 2016 and 2016-. Taught the full module in the special term 2000. This includes tutorial sessions containing a group of 10-12 students. Class strength, 180-200 students.
- CM1111 – *Basic Inorganic Chemistry* (Essential Module with ~ 425 undergraduate students). 2003 & 2004.

### **Tutorials**

- CM1101 – *Principles of Modern Chemistry* (1998 & 1999) – A class of about 10 students per tutorial group.
- CM1111 – *Basic Inorganic Chemistry* (1999 & 2000) – A class of about 10 students per group.

### **Laboratory Courses**

- CM2192 *Experimental Physical Chemistry* (1997 & 1998). Class size 60.
- CM2191 *Experiments in Inorganic and Organic Chemistry* (1999). Class size 60.
- CM2111 *Inorganic Chemistry Practicals* (2001). Class size 60.
- CM2101 *Principles of Spectroscopy Practicals* (2001). Class size 60.
- CM3291 *Advanced Inorganic and Organic Chemistry Experiments*, 1998, from 2000 - 2012. Class size 60.
- CM1111 *Basic Inorganic Chemistry Practicals*, 2003. Class size 60.
- CM1502 *Physical Chemistry for Engineering*, 2013-2014. Class size 60
- CM3291 *Special Experiments in Inorganic Chemistry*, 2013-2014, Class size of 30

### **Educational Workshop Conducted:**

- Two-day Short Course in Small Molecule X-ray Crystallography at the Institute of Chemical and Engineering Sciences, Jurong Island, Singapore May 10-11, 2005.
- Special Program in Science: Talk on ‘Symmetry in molecules and crystals’ to a group of about 50 students on March 8, 2005.
- Organized a five-day workshop and training course on the crystallographic software program SHELXTL by Dr. Ludger Haming, Bruker AXS, Germany, October 16-20, 2000. More than 20 graduate students of the department were given hands-on tutorials in the X-Ray diffraction laboratory.

- Undergraduate Scientific Essay Writing Projects: Under the Science Foundation Module SFM 1100 twelve different projects were guided from 1997 to 2002 involving about 100 first year students.

### **JJ Vittal's contributions for the collaboration and close interactions with India and other Asian countries**

About 25 years ago, single crystal diffractometers were not accessible as of now for the researchers in the developing countries. When JJ moved to Singapore in 1997, he was in-charge of the first single crystal X-ray diffractometer in Asia, equipped with a CCD detector for fast data collection. He generously helped several faculty members in India and Asia to excel in their research by providing his expertise in single crystal X-ray crystallography. They include Prof. P. Bhyrappa (IIT-Madras), Prof. T.K. Chandrasekhar (IIT-Kanpur), Prof. V. Chandrasekhar (IIT-Kanpur), Prof. R. Mukherjee (IIT-Kanpur), Dr. P.T. Perumal (Central Leather Research Institute, Madras), Prof. A. Ramanan (IIT-Delhi), Prof. K.C.K. Swamy (University of Hyderabad), Prof. G. Sundararajan (IIT-Madras), Prof. Muktimoy Chaudhury (Indian Association for the Cultivation of Science), Prof. S. Govindarajan (Bharathiar University); Prof. C.M. Nararaja (IIT-Roper), Prof C. Sinha (Jadavpur University), Prof. You Xiao-Zeng (Nanjing Univ., China) and Prof. David Harding (Walailak University, Thailand). He has also provided his expertise in solving, refining, and fixing problems in crystal structures to several colleagues in India. In some of the publications JJ's name was included, but most of the publications he asked them to just acknowledge in their publications.

JJ was actively involved in promoting close interactions between the scientists and researchers from the top educational and research institutions in India and the department of chemistry at NUS through a series of symposia Singapore-India Cooperative & Collaborative Chemistry Symposium (SInCCCS-X), 2002-2009. Several chemistry faculty members visited NUS on many occasions.

JJ invited several faculty members from India to visit his laboratory. They stayed in JJ's lab for a period of a few days to a few months. Some of them are Prof. Kumara Swamy (University of Hyderabad), Prof. Kumar Biradha (IIT-Kharagpur), Prof. K.C. Patil (IPC, IISc), Prof. S. Natarajan (SSCU, IISc), Prof. Gautam R. Desiraju (SSCU, IISc), Prof. A. Ramanan (IIT-Delhi), Prof. M. Palaniandavar (Bharathidasan University), Prof. C. Sinha (Jadavpur University), Prof. P.A.W. Dean (Univ. Western Ontario, Canada).

JJ has been giving popular lecture on 'How to be a successful researcher' in Singapore, India, Canada, China, and S. Korea for the past several years. This is for the students to get motivated to do research and to cope with failure, stress, timeline, and pressure.

Since 2014, the International Year of Crystallography (IYCr2014), he has been serving as one of the judges in the World Crystal Growing Challenge to promote science through the art of growing crystals. Interestingly, most of the participants are from developing countries including Argentina, Bolivia, Chile, Philippines, Poland, Uruguay, and Vietnam. Apart from promoting science education via crystal growing challenge, which JJ started in Singapore in 1997, he is also responsible for providing his experts and experience to start such competition in other countries in Asia. He helped in celebrating IYCr2014 in countries like Malaysia, Thailand, Indonesia, and Fiji Island. He summarized his efforts in promoting crystallography in Asian countries in one of the invited talks at the satellite meeting of IUCr Congress in Hyderabad in 2014.