

Appendices

Appendix – A**List of Publications (A1)****Published*****Journal Papers***

1. Rajinder Kaswan, S. C. Sivasubramanian, Yogesh Kumar, and A. Dalvi. Conductivity and Capacitance Studies of Silica Glass Composites Containing [BMIM] Br and LiCl. *Material Research Express* **6** (2019) 105202.
2. Rajinder Kaswan, M. Dinachandran Singh S. C. Sivasubramanian, and A. Dalvi. Preparation and Characterization of Novel Solid Electrolytes Based on [EMIM] BF₄ and Lithium Nitrate Confined Silica Gels. *Electrochimica Acta*, 323 (2019) 134841.
3. Gurpreet Kaur, Rajinder Kaswan, S. C. Sivasubramanian, Anshuman Dalvi. Electrical Conductivity and Thermal Studies on [EMIM] BF₄, Li⁺ and Cu²⁺ Confined Silica Gel Composites. *AIP Conference Proceedings* (2019) 10065

Book Chapter

1. Rajinder Shivran, S. C. Sivasubramanian and A. Dalvi, Sol-gel Synthesized Ionic Liquid Incorporated Novel Glassy Ionic System. Chapter 13, *Energy Storage and Conversion: Materials and Devices* Ed: Ashok Kumar Narosa Publications (2017), Page: 143.

To be communicated

1. Rajinder Kaswan, S. C. Sivasubramanian, and A. Dalvi. Effect of Non-Hydrolytic Process on Structure and Properties of Novel Silica Gel Electrolytes Based on [EMIM] BF₄ and Lithium Nitrate Confinement. (to be communicated)
2. Rajinder Kaswan, S. C. Sivasubramanian, and A. Dalvi. Preparation and Characterization of Novel Solid Electrolytes Based on [EMIM] CF₃SO₃ and Lithium Nitrate Confined Silica Gels. (to be communicated)

3. Rajinder Kaswan, S. C. Sivasubramanian, and A. Dalvi. Inhibition of Mixed Alkali Effect in KNO_3 substituted Novel Solid Electrolytes Based on [EMIM] BF_4 and Lithium Nitrate Confined Silica Gels. (to be communicated)
4. Rajinder Kaswan, S. C. Sivasubramanian, and A. Dalvi. XPS Studies to Understand the Confinement of Ionic Liquids in Novel Silica Ionogels. (to be communicated)
5. Rajinder Kaswan, S. C. Sivasubramanian, and A. Dalvi. Effect of Non-Hydrolytic Process on Structure and Properties of Novel Silica Gel Electrolytes Based on [EMIM] CF_3SO_3 and Lithium Nitrate Confinement. (to be communicated)

Oral/Poster presentations in national/international conferences (A2)**Oral presentation**

1. R. Shivran, S.C. Sivasubramanian, Anshuman Dalvi. Structural and Conductivity Studies of EMIM BF₄ Doped Lithium Silicate Glasses Prepared by Different Sol-Gel Routes. in 12th National Conference on Solid State Ionics, organised by Department of Physics, BITS Pilani, Pilani Campus, Rajasthan, during December 21-23, 2017.
2. R. Shivran, S.C. Sivasubramanian, Anshuman Dalvi. Structural and Conductivity Studies on Ionic Liquid Confined Lithium Silicate Glasses Prepared by Sol-Gel Route. International meeting on Energy Storage Devices, organized by Department of Physics, IIT Roorkee, Roorkee, Uttarakhand, during December 10-12, 2018.

Poster presentations

3. R. Shivran, S.C. Sivasubramanian, Anshuman Dalvi, “Thermal Stability Investigations on Cadmium Doped Lead Based Glassy Systems” in National Conference on New Frontiers in Chemistry –From Fundamentals To Application, organised by BITS Pilani, Goa Campus, Goa during January 28 – 29, 2017.
 4. R. Shivran, S. C. Sivasubramanian, Anshuman Dalvi, “Preparation of 1-Ethyl-3-methylimidazolium tetrafluoroborate Doped Lithium Silicate Glasses With Enhance Conductivity by Sol-Gel Process” in International Conference on Recent Trends in Chemical Sciences, organised by Government Engineering College, Bikaner, Rajasthan during January 12-13, 2017.
 5. R. Shivran, S. C. Sivasubramanian, Anshuman Dalvi, “Effects of Mg²⁺ Doping in Conductivity of Ionic Liquid Incorporated Lithium Silicate Glasses Prepared by Sol-Gel Process” in National Conference On Organic chemistry in Sustainable development: Recent Advances and Future Challenges, Department of Chemistry, organised by BITS Pilani, Pilani, Rajasthan, during August 29 - 30, 2016.
 6. R. Shivran, S. C. Sivasubramanian, Anshuman Dalvi, “Preparation and Characterization of Multi-Component Glasses by X - Ray Diffraction, Electron Paramagnetic Resonance and Thermal Analysis” in International Conference on Nascent Developments in Chemical Sciences: Opportunities for Academia-
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- Industry Collaboration, organised by Department of Chemistry, BITS Pilani, Pilani, Rajasthan, during October 16 - 18, 2015.
7. R. Shivran, S. C. Sivasubramanian, Anshuman Dalvi, “Sol-gel Synthesized Ionic Liquid Incorporated Novel Glassy Ionic System” in 11th National Conference on Solid State Ionics, organised by Tejpur University, Assam, during December 21 - 23, 2015.

Workshop Attended (A3)

Workshops Attended

1. Q-chem workshop, arranged by BITS Pilani, Pilani Campus, Rajasthan on October 19, 2015.
2. Q-Chem workshop, arranged by NCL, Pune at IISER, Pune on December 17, 2014.

Appendix B

Brief Biography of Supervisor (B1)

Prof. S. C. Sivasubramanian

He is an experienced professor with a demonstrated history of working in the higher education industry. Skilled in magnetic resonance spectroscopy, amorphous materials, and interested in curriculum development, e-learning, and data analysis. Strong education professional with a Ph.D. focused in Physical Chemistry from IIT Kanpur. He obtained his master's in chemistry from University of Hyderabad in 1982. Later, he received his doctoral degree in 1990 from IIT Kanpur in field of Physical Chemistry. Thereafter, he joined BITS Pilani, Pilani campus in academics in 1992.

His major interest was in physical chemistry, magnetic resonance spectroscopy (EPR and NMR) and in amorphous systems. He has also contributed in various administrative positions. He remained as a unit chief of CAHU (Computer Assisted Housekeeping Unit) from 2006-2018. He also handled the position of Dean Administration, BITS Pilani, Pilani Campus from 2014-2018 and was positioned as Acting Registrar from 2016-2018.

Brief Biography of Supervisor (B2)

Prof. Anshuman Dalvi

He received his M.Sc. from School of Physics D. A. University, Indore in 1997 and Ph.D. from Indian Institute of Technology, Kanpur in 2003 under the supervision of Prof K. Shahi. Thereafter, he continued at Department of Physics, IIT Kanpur, as a CSIR project scientist for almost a year and worked with Prof Satish Chandra Agarwal. Subsequently, in June 2004, he joined the Physics department BITS-Pilani as a Lecturer, from January 2006 he worked as an Assistant Professor, from February 2013, Associate Professor, and working as a Professor of Physics from July 2018.

His research centres on experimental solid-state ionics, a field dedicated to study of fast ionic solids and their applications to energy devices. Thus, his research group at Pilani is interested in studying ionic and electronic properties of glasses, polymers, glass-ceramic composites and polymer-ceramic hybrids in view of their applications in solid state ionic devices. He has guided two PhD students and currently guiding three. He was the convener of 12th National Conference on Solid State Ionics organized at BITS, Pilani during December 21-23, 2017.

Brief biography of the Student (B3)

Mrs. Rajinder Kaswan (Nee Rajinder Shivran)

She obtained her graduation (in 2010) and post-graduation (in 2012) from University of Rajasthan. In 2012, she joined Department of Chemistry as a research scholar. Later in 2013, she joined the group of amorphous materials and solid-state ionics under the supervision of Prof. S. C. Sivasubramanian and Prof. Anshuman Dalvi.

In her doctoral degree, she worked on the confinement of ionic liquid in lithium silicate glasses and explored for their structural and electrical properties. She has also worked upon lead oxyhalide glasses and explored their structure and property using thermal and spectroscopic investigations. She also developed her expertise in handling certain software and instruments independently in her PhD tenure. She is an author of a book chapter (Chapter 13) in a book entitled “*Energy Storage and Conversion: Materials and Devices*” Ed: Ashok Kumar Narosa Publications (2017). She is also an author of two research papers in international journals and one research paper as conference publication.



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