

Dr. X. SAHAYA SHAJAN

Professor & Director (Research)

PSN College of Engineering and Technology (Autonomous)

(Affiliated to Anna University, Chennai)

Tirunelveli – 627152, Tamilnadu, India

E mail: shajan89@gmail.com/sahay.shajan16@gmail.com

Mobile: 94431 28713

EDUCATION

MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI

Ph.D. (Physics) – 2007 – By thesis

Thesis title: Growth and Characterization of Pure and Doped Calcium Tartrate Tetrahydrate Crystals

M.Phil. (Physics) – 1993 - First Class (78%)

Dissertation title: Lattice Variation and Stability of $(NaCl)_x(KCl)_{0.9-x}(KBr)_{0.1}$ Mixed Crystals Grown from Aqueous Solutions

BHARATHIDASAN UNIVERSITY, TIRUCHIRAPALLI

M.Sc. (Physics) – 1989 – Second Class (62%)

MADURAI KAMARAJ UNIVERSITY, MADURAI

B.Sc. (Physics) – 1987 – First Class (68.3%)

WORK EXPERIENCE (as on 31.1.2017)

PSN COLLEGE OF ENGINEERING AND TECHNOLOGY, MELATHEDIYOOR, TIRUNELVELI

Present Designation: Director (Research)

Period of Work: 20.5.2006 till date - 10 years | 8 months | 11 days

SIVANTHI ADITANAR COLLEGE, PILLAYARPURAM, NAGERCOIL

Designation: Lecturer (SG)

Period of Work: 01.09.1989 to 19.5.2006 - 16 years | 8 months | 19 days

- ✓ Handled B.Sc. and M.Sc. Physics courses
- ✓ Guided M.Sc. Projects
- ✓ Handled Core papers on Crystal Growth and Material Science for M.Phil. scholars
- ✓ Conducted Career Guidance Programmes

TOTAL WORK EXPERIENCE - 27 years | 5 months

CURRENT RESPONSIBILITIES

- ❑ Motivating the faculty to take up new research ideas, monitoring the overall research activities and implementing new research schemes for the benefit of faculty and students in the capacity of Director (Research) at PSN College of Engineering and Technology, Tirunelveli.
- ❑ Heading Centre for Scientific and Applied Research, the Research Division of PSN College of Engineering and Technology.
- ❑ Guiding scholars for their Ph.D. degrees.
- ❑ Mobilizing research funds for Centre for Scientific and Applied Research by submitting research proposals to National funding agencies of India.
- ❑ Organizing National level Conferences and Workshops on the research areas of interest.
- ❑ Conducting periodical Faculty Development programmes for the faculty of School of Basic Engineering and Sciences.
- ❑ Organizing INSPIRE Science Camps, Quiz and co-curricular programmes on National Science day for School students.

RESEARCH EXPERIENCE

- Involved in research since 1992.
- Published 46 research papers in internationally reputed scientific journals.
- Guided 23 post graduate projects and 2 of them were funded by Tamilnadu State Council for Science and Technology (TNSCST), Chennai under Student Project Scheme.
- Supervised 10 scholars for their M.Phil. Dissertation work and all of them are granted degrees.
- Supervised 6 scholars for their Ph.D. and all of them are granted degrees.
- Currently 6 Scholars are working for their Ph.D. degree under my supervision.
- Successfully completed 3 major research projects funded by Department of Science and Technology (DST), Govt. of India and Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy (DAE), Govt. of India. Total project cost was **INR 74.03 lakhs**.
- Currently working on 1 major research project funded by Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Govt. of India. The project cost is **INR 23.44 lakhs**.

RESEARCH PUBLICATIONS

❑ Papers published in international/national journals	:	53
❑ Review articles written	:	02
❑ Papers presented in international/ national conferences	:	44
❑ Invited talks delivered	:	06

PUBLICATIONS DURING LAST 5 YEARS (2012-2017)

On Functional Materials

1. Plasma treated TiO₂ aerogel nanostructures as photoanode material and its influence on the performance of quasi-solid dye-sensitized solar cells, S. Alwin, Ranjani Menon, P Y Nabhiraj, K G K Warriar, P V A Padmanabhan, **X. Sahaya Shajan**, *Material Research Bulletin* 86 (2017) 201-208 (I.F. = 2.4)

2. Ionic liquid incorporated nanocomposite polymer electrolytes for rechargeable lithium ion battery: A way to achieve improved electrochemical and interfacial properties, K. Karuppasamy, Hee Woo Rhee, P. Anil Reddy, Dipti Gupta, Liviu Mitu, Anji Reddy Polu and **X. Sahaya Shajan**, *Journal of Industrial and Engineering Chemistry* (2016) ([doi:10.1016/j.jiec.2016.06.020](https://doi.org/10.1016/j.jiec.2016.06.020)) (IF – 4.2)
3. Electrochemical and cycling performances of novel nanofluorobutanessulfonate (nonaflate) ionic liquid based ternary gel polymer electrolyte membranes for rechargeable lithium ion batteries, K. Karuppasamy, P. Anil Reddy, G. Srinivas, Amit Tewari, Ramakant Sharma, **X. Sahaya Shajan**, Dipti Gupta, *J. Membrane Sci.* 514 (2016) 350 – 357. (IF – 5.6)
4. Surface modification of titania aerogel films by oxygen plasma treatment for enhanced dye adsorption, S. Alwin, **X. Sahaya Shajan**, Ranjini Menon, P. Y. Nabhiraj, K. G. K. Warriar, G. Mohan Rao, *Thin Solid Films* 595 (2015) 164 – 170. (IF – 1.9)
5. Effect of substrate on electroplated copper sulphide thin films, B. Bharathi, S. Thanikaikarasan, Pratap Kollu, P. V. Chandrasekar, K. Sankaranarayanan, **X. Sahaya Shajan**, *J. Mater. Sci: Mater Electron.* (2014). (IF – 2.2)
6. Effect of nanochitosan on structural, thermal and electrochemical properties of poly ether based electrolytes complexed with lithium bis (trifluoromethanesulfonyl imide), Karuppasamy Karuppasamy, Sethuramachandran Thanikaikarasan, D. Eapan, Rajendran Antony, Subramaniam Balakumar, Thaiyan Mahalingam and **Xavier Sahaya Shajan**, *Journal of New Materials for Electrochemical System* 17 (2014) 197 -203. (IF – 0.7)
7. Structural morphological and impedance spectroscopic analysis of nano Li ($\text{Li}_{0.05}\text{Ni}_{0.4}\text{Co}_{0.3}\text{Mn}_{0.25}$) O_2 cathode material prepared by sol-gel method, A. Nichelson, S. Thanikaikarasan, Pratap Kollu, P. J. Sebastian, T. Mahalingam and **X. Sahaya Shajan**, *Journal of New Materials for Electrochemical System* 17 (2014) 153 – 158. (IF – 0.7)
8. Investigations on the effect of chitin nanofibre in PMMA based solid polymer electrolyte systems P. M. Shyly, S. Dawn Dharma Roy, Paitip Thiravetyan, S. Thanikaikarasan, P. J. Sebastian, D. Eapan and **X. Sahaya Shajan**, *Journal of New Materials for Electrochemical System* 17 (2014) 147 – 152. (IF – 0.7)
9. Effect of X-ray irradiation on dielectric properties of polymer electrolytes complexed with LiCF_3SO_3 B. Vijil Vani, S. Thanikaikarasan, T. Mahalingam, P. J. Sebastian, L. E. Vereia and **X. Sahaya Shajan**, *Journal of New Materials for Electrochemical System* 17 (2014) 139 – 145. (IF – 0.7)
10. Effect of nanochitosan and succinonitrile on the AC ionic conductivity of plasticized nanocomposite solid polymer electrolytes, K. Karuppasamy, C. Vijil Vani, A. Nichelson, S. Balakumar and **X. Sahaya Shajan**, *AIP Conference Proceedings* 1536, 845 - 846 (2013) (IF – 0.7)
11. Investigation of solution pH effect on electrochemical, micro structural, optical and photo electrochemical properties of CdSe thin films, Sethuramachandran Thanikaikarasan, Chinnapyan Vedhi, **Xavier Sahaya Shajan**, Thaiyan Mahalingam, *Solid State Sciences* 15 (2013) 142 – 151. (IF – 2.1)
12. Effect of succinonitrile and nano hydroxyapatite on ionic conductivity and interfacial stability of polyether – based plasticized nanocomposite polymer electrolytes (PNCSPPE), K. Karuppasamy, C. Vijil Vani, R. Antony, S. Balakumar, **X. Sahaya Shajan**, *Polym. Bull.* 70 (2013) 2531 – 2545. (IF – 1.5)

13. Combined effect of nanochitosan and succinonitrile on structural, mechanical, thermal and electrochemical properties of plasticized nanocomposites polymer electrolytes (PNCPE) for lithium batteries, K. Karuppasamy, R. Antony, S. Thanikaikarasan S. Balakumar, **X. Sahaya Shajan**, *Ionics* 19 (2013) 747 - 755. (IF – 2.2)
14. Electrical and dielectric behavior of nano-bio ceramic filler incorporated polymer electrolytes for rechargeable lithium batteries, K. Karuppasamy, T. Linda, S. Thanikaikarasan, T. Mahalingam, P. J. Sebastian and **X. Sahaya Shajan**, *Journal of New Materials for Electrochemical System* 16 (2013) 115 - 120. (IF – 0.7)
15. Effect of chitin nanofibres on the electrochemical and interfacial properties of composites solid polymer electrolytes, K. Karuppasamy, S. Thanikaikarasan, Paitip Thirvetyan, D. Eapan, P. J. Sebastian and **X. Sahaya Shajan**, *Journal of New Materials for Electrochemical System* 16 (2013) 121 – 126. (IF – 0.7)
16. Effect of nanochitosan on electrochemical, interfacial and thermal properties of composite solid polymer electrolytes, K. Karuppasamy, S. Thanikaikarasan, R. Antony, S. Balakumar, **X. Sahaya Shajan**, *Ionics* 18 (2012) 737 – 745. (IF – 2.2)
17. X-ray line broadening and photo electrochemical studies on CdSe thin films, S. Thanikaikarasan, **X. Sahaya Shajan**, V. Dhanasekaran, T. Mahalingam, *J. Mater. Sci.* 46 (2011) 4034-4045. (IF – 2.3)

On Crystal Growth and Characterization

1. Growth and characterization of bimetallic (Na and K) phthalate single crystals, C. Amuthambigai, C.K. Mahadevan and **X. Sahaya Shajan**, *Appl. Phys. A.* 122 (2016), 4-8. (I.F. = 1.7)
2. Growth, optical, thermal, mechanical and electrical properties of anhydrous sodium formate single crystals C. Amuthambigai, C. K. Mahadevan, **X. Sahaya Shajan**, *Current Applied Physics* 16 (2016) 1030 -1039. (IF – 2.1)
3. Optical, spectral and dielectric studies of L-histidine added potassium hydrogen phthalate crystals, C. Amuthambigai, C. Guzman-Afonso, M. E. Torres, **X. Sahaya Shajan**, *Optik* (2016) 3292 – 3298. (IF – 0.8)
4. Optical studies of potassium acid phthalate single crystals added with amino acids, C. Amuthambigai, C. K. Mahadevan and **X. Sahaya Shajan**, *Optik* 127 (2016) 5935 – 5941. (IF – 0.8)
5. Growth and characterization of strontium formate dihydrate ($\text{Sr}(\text{HCOO})_2 \cdot 2\text{H}_2\text{O}$) single crystals doped strongly with glycine, S. Muthupoongodi, S. Theodore David Manickam, C.K. Mahadevan, J. Angel Mary Greena, S. Balakumar, **X. Sahaya Shajan**, *Optik* 127 (2016) 4320 -4323. (IF – 0.8)
6. Effect of glycine addition on the structural, thermal, optical, mechanical and electrical properties of $\text{Sr}(\text{HCOO})_2 \cdot 2\text{H}_2\text{O}$ crystals, S. Muthupoongodi, S. Theodore David Manickam, C.K. Mahadevan, J. Angel Mary Greena, S. Balakumar, **X. Sahaya Shajan**, *J. Cryst. Growth* 428 (2015) 46 – 53. (IF – 1.5)

DETAILS OF RESEARCH PROJECTS HANDLED AS PRINCIPAL INVESTIGATOR

S.No.	Title of the Project	Funding Agency	Fund Sanctioned (Rupees)	Status
1	Electrochemical and interfacial studies on chitin incorporated nanocomposite polymer electrolytes	DST	25,22,800/-	Completed
2	Effect of electron beam irradiation on the interfacial properties of polymer membranes dispersed with nanometric fillers	DAE – BRNS	23,85,900/-	Completed
3	Fabrication of solid state dye sensitized solar cells based on plasma surface modified titania aerogels	DAE – BRNS	24,95,750/-	Completed
4	Studies on titania aerogels-metal organic framework composite based photoanodes for efficiency enhancement in dye solar cells	DST-SERB	23,44,000/-	Ongoing
Total Grant received as on 30.6.2016 (Rupees ninety seven lakhs forty seven thousand four hundred and fifty only)			97,47,450/-	

DETAILS OF RESEARCH PROJECTS HANDLED AS Co-PRINCIPAL INVESTIGATOR

S.No.	Title of the Project	Funding Agency	Fund Sanctioned (Rupees)	Status
1	Conservation of water and maintaining sanitation and hygiene along the open drinking water channel (73 km) from Prancherry to Tsiyanvilai in the Tirunelveli and Thoothukudi districts of Tamilnadu	DST (WaSH Project under NCSTC)	12,00,000/-	Completed
2	Development of Photoelectrochemical Solar cells by electrochemical synthesis and characterization of copper chalcogenide thin films	DAE – BRNS	24,99,500/-	Completed
3	Radiation effects on the physico-chemical properties of strontium formate dihydrate crystals	DAE – BRNS	18,17,250/-	Completed
4	Development of a prototype DC non transferred arc plasma reactor for converting zircon to zirconia	DST (under TSDP)	93,66,500/-	Ongoing
Total Grants received as on 30.6.2016 (Rupees one crore forty eight lakhs eighty three thousand two hundred and fifty)			1,48,83,250/-	

INTERNATIONAL / NATIONAL CONFERENCES/WORKSHOPS ORGANIZED

1. International Conference on Functional Materials (ICFM 2016) – 7-10, September 2016, Centre for Scientific and Applied Research, PSN College of Engineering and Technology, Tirunelveli, India (*Funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Mumbai & Science and Engineering Research Board (SERB), Department of Science and Technology (DST), New Delhi*)
2. III Lecture cum Hands-on Workshop on Advanced Functional Materials (Synthesis and Characterization) – 2-4, March 2016, Centre for Scientific and Applied Research, PSN College of Engineering and Technology, Tirunelveli, India

3. III National Conference on Advanced Materials - 23-25, January 2013, Centre for Scientific and Applied Research, School of Basic Engineering and Sciences, Tirunelveli, India (*Funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Department of Science and Technology (DST), Defence Research & Development Organisation (DRDO), Council for Scientific and Industrial Research (CSIR)*)
4. National Workshop on Advanced Materials – 23-24, February 2012, Centre for Scientific and Applied Research, School of Basic Engineering and Sciences, Tirunelveli, India (*Funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Govt. of India*)
5. XV National Seminar on Crystal Growth - 23-25, February 2011, Centre for Scientific and Applied Research, School of Basic Engineering and Sciences, Tirunelveli, India (*Funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Govt. of India*)
6. II National Conference on Advanced Materials, 25-27, August 2010, Centre for Scientific and Applied Research, School of Basic Engineering and Sciences, Tirunelveli, India (*Funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Govt. of India & Department of Science and Technology (DST), Govt. of India*)
7. I National Conference on Advanced Materials, 27-29, August 2009, Centre for Scientific and Applied Research, School of Basic Engineering and Sciences, Tirunelveli, India (*Funded by Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Govt. of India*)

INSPIRE SCIENCE CAMPS ORGANIZED (FUNDED BY DST, NEW DELHI)

- Inspire Internship Camp 2011 – 27-31, December 2011
- Inspire Internship Camp 2013 – 20-24, August 2013
- Inspire Internship Camp 2014 – 25-29, August 2014
- Inspire Internship Camp 2015 – 21-25, August 2015
- Inspire Internship Camp 2016 – 22-26, July 2016

PROFESSIONAL MEMBERSHIP

- Life Member, Material Research Society of India (MRSI)
- Life Member, Indian Society for Technical Education (ISTE)
- Life Member, Photonics Society of India (PSI)

AWARDS AND RECOGNITIONS

- INSA Visiting Scientist award for the year 2014-15
- Member (Teacher Representative), Governing Council, PSN College of Engineering and Technology (Autonomous), Tirunelveli (2012 till date)
- Member (Governing Council Nominee), Finance Committee, PSN College of Engineering and Technology (Autonomous), Tirunelveli (2012 - 2014)
- Chairman, Board of Studies (Science and Humanities), PSN College of Engineering and Technology (Autonomous), Tirunelveli (2012 -2016)
- Best Paper Presentation Award, XVIII National Seminar on Crystal Growth, 24-26, February, 2014, SSN College of Engineering, Kalavakkam, Chennai.

- Best Poster Presentation Award, XXV National Conference on Crystal Growth and Epitaxy, 6-7, February 2015, Crystal Growth Centre, Anna University, Chennai.
- Chaired one session in the XXV National Seminar on Crystal Growth and Epitaxy, 6-7 February, 2015, Crystal Growth Centre, Anna University, Chennai
- Chaired one session in the XVIII National Seminar on Crystal Growth, 24-26 February 2014, SSN College of Engineering, Chennai
- Convener, Programme Implementation Committee (PIC) for MoU between VECC, Kolkata – PSNCET.

OTHER INFORMATION

- Prepared a documentary film on the “**Life and Scientific achievements of Albert Einstein**” (*in Tamil*) to remark the World Year of Physics – 2005.