

The American College, Madurai
FACULTY PROFILE

Name : **Dr. R. A. J. R. SHEEBA**
Designation : **Assistant Professor**
Department : **PHYSICS**
Date of Joining : **21.06.2019**
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I. Education Qualification:

Degree	Subject	College/University & Place	Year Completed
Ph.D.	Physics	Madurai Kamaraj University Tamil Nadu, India.	2018
M. Phil.	Physics	Bharathidasan University, Tiruchirappalli, Tamil Nadu India.	2007
M.Sc.	Physics	The American College (Affiliated to Madurai Kamaraj University) Tamil Nadu, India.	2005
B.Sc.	Physics	Lady Doak College (Affiliated to Madurai Kamaraj University) Tamil Nadu, India.	2003

Specialization in Research:

- X – ray Crystallography

Research Interests:

Charge density studies in semiconductors, diluted magnetic semiconductors and metals

Other Work Experience:

Designation	Institution	Year – From (month/year) To (month/year)
Lecturer	S. P. College of Science and Arts, Madurai, Tamil Nadu, India	December 2005 – May 2006
Lecturer	Yadava College, Madurai, Tamil Nadu, India	June 2006 – May 2008
Lecturer	USIC, Madurai Kamaraj University, Madurai, Tamil Nadu, India.	June 2008 – May 2009
Senior research Fellow (CSIR)	The Madura College, Madurai, Tamil Nadu, India.	July 2009 – March 2012
Assistant Professor	The American College, Madurai, Tamil Nadu, India.	June 2019 – till date

Publications:

Total : 17 papers

International : 16 papers

National : 1 paper

Articles Published in International Journals: (Peer reviewed)

16

Structure, charge density and Hirshfeld surface analysis of proton transfer complex 2-amino-4-methylpyridinium 2-(3-methylphenyl)-acetate

C. Anzline, S. Israel, K. Sujatha, **R.A.J.R. Sheeba**

Journal of the Chinese Chemical Society (2022) 1 (Wiley Online Library) (**I.F. 1.967**)

<https://doi.org/10.1002/jccs.202100433>

15

Charge density of difluorides from synchrotron diffraction data and investigation of bonding in low valent binary fluorides

K. Sujatha, S. Israel, C. Anzline, **R.A.J.R. Sheeba**

Materials Chemistry and Physics 259 (2021) 123990 (Elsevier) (**I.F. 3.408**)

<https://doi.org/10.1016/j.matchemphys.2020.123990>

14

Hirshfeld Surface, Charge Density and Site Selectivity Studies of 1-(2-Methyl-5-nitro-1H-imidazol-1-yl)-acetone

C. Anzline, S. Israel, K. Sujatha, **R.A.J.R. Sheeba**

Computational and Theoretical Chemistry, 1191 (2020) 113044(Elsevier) (**I.F. 1.605**)

<https://doi.org/10.1016/j.comptc.2020.113044>

13

Analysis of Oxygen bonding with metals of different oxidation states from experimental charge density distribution

K. Sujatha, S. Israel, C. Anzline, K.S. Syed Ali, **R.A.J.R. Sheeba**, P. Richard Rajkumar

Physica B:Condensed Matter, 555 (2019)21 – 31. (Elsevier) (I.F. 1.880)

<https://doi.org/10.1016/j.physb.2018.12.005>

12

High Resolution Synchrotron Diffraction Study on Charge Density Distribution of Ampicillin Trihydrate: A Correlation between DFT and Multipole Models

C. Anzline, S. Israel, R. Niranjana Devi, **R.A.J.R. Sheeba** and P. Richard Rajkumar

Chinese Journal of Chemical Physics, 30 (1) (2017) 50 – 62.(Thomson Reuters) (I.F. 0.496)

DOI:10.1063/1674-0068/30/cjcp1607143

11

Understanding electronic and magnetic transitions in ball milled diluted magnetic semiconductor $\text{Si}_{1-x}\text{Ni}_x$ through experimental electron density distribution

R.A.J.R. Sheeba, S. Saravanakumar, S. Israel and R. Saravanan

Journal of Alloys and Compounds 728 (2017) 887 – 895.(Elsevier) (I.F. 4.175)

<http://dx.doi.org/10.1016/j.jallcom.2017.09.072>

10

X – ray derived experimental charge density distribution in GaF_3 and VF_3 solid systems

K. Sujatha, S. Israel, C. Anzline, R. Niranjana Devi, **R.A.J.R. Sheeba**

Physica B 496 (2016)74 – 81.(Elsevier) (I.F. 1.880)

<http://dx.doi.org/10.1016/j.physb.2016.05.032>

9

Investigation on van der Waals epitaxy gap in isostructural semiconducting germanium tellurides: HfGeTe_4 and ZrGeTe_4

R.A.J.R. Sheeba, S.Israel and S. Saravanakumar

Chinese Journal of Physics 54 (2016) 668 – 677.(Elsevier) (I.F. 2.544)

<http://dx.doi.org/10.1016/j.cjph.2016.08.014>

8

Signature of antiferromagnetism in entropy maximized charge density distribution of melt grown diluted magnetic semiconductor $\text{Ge}_{1-x}\text{V}_x$

R.A.J.R. Sheeba, R. Saravanan and L. John Berchmans

Journal of Materials Science: Materials in Electronics 26 No. 6 (2015)3772 – 3780. (Springer) (I.F. 2.195)

DOI 10.1007/s10854-015-2901-y

7

Magnetic and charge derived properties of ball milled DMS:Si_{0.98}Mn_{0.02}

R.A.J.R. Sheeba, R. Saravanan and S. Sasikumar

Physica B **426** (2013) 71 – 78.(Elsevier) (I.F. 1.880)

<http://dx.doi.org/10.1016/j.physb.2013.05.015>

6

Magnetism in melt grown dilute magnetic semiconductor Ge_{1-x}Mn_x from electron density

R.A.J.R. Sheeba, R. Saravanan and L. John Berchmans

Materials Science in semiconductor processing Vol. 15 (2012) 731–739(Elsevier) (I.F. 2.722)

<http://dx.doi.org/10.1016/j.mssp.2012.03.007>

5

Comparison of electronic structure of as grown and solar grade silicon samples

R. Saravanan and **R.A.J.R. Sheeba**

Semiconductors Vol. 46, No. 4 (2012) 440–446(Springer) (I.F. 0.691)

DOI: 10.1134/S1063782612040185

4

A theoretical estimation of the charge density distribution in the diluted magnetic semiconductors of Si_{1-x}M_x and Ge_{1-x}M_x (M = V, Mn, Co)

R.A.J.R. Sheeba, R. Saravanan and L. John Berchmans

Materials Science Forum Vol. 699 (2012)167–183(Trans Tech publications, Switzerland)

(I.F. 0.4) doi:10.4028/www.scientific.net/MSF.699.167

3

The analysis on the rearrangement of charge density distribution in response to magnetic behavior in Mn doped SnO₂ nanoparticles

S. Saravanakumar, M. Pattammal, S. Israel, **R.A.J.R. Sheeba** and R. Saravanan

Physica B **407** (2012) 302–310(Elsevier) (I.F. 1.880)

doi:10.1016/j.physb.2011.10.004

2

Analysis on experimental valence charge density in Germanium at RT and 200 K

S. Israel, K.S. Syed Ali, **R.A.J.R. Sheeba** and R. Saravanan

Journal of Physics and Chemistry of Solids **70** (2009) 1185–1194(Elsevier) (I.F. 2.048)

doi:10.1016/j.jpcs.2009.07.002

1

X-ray analysis of charge density distribution in GaP at 296 and 200K using Multipole and MEM models

S. Israel, K.S. Syed Ali, **R.A.J.R. Sheeba** and R. Saravanan

Chinese Journal of Physics **47**, 3(2009) 378–400(Elsevier) (I.F. 2.544)

<http://PSROC.phys.ntu.edu.tw/cjp>

Articles published in National Journals: (Peer reviewed)

1

Analysis on insulator – metal transition in Yttrium doped LSMO from electron density distribution
S. Israel, S. Saravanakumar, R. Renuretson, **R.A.J.R. Sheeba** and R. Saravanan
Bulletin of Materials Science 35 (2012)111–122. (Springer) (I.F. 0.870)

Conference / workshop/ Seminar Presentations:

12

Synthesis and X-ray characterization of magnetic semiconducting nanosystem of CeO₂:Mn
S. Saravanakumar, **R.A.J.R. Sheeba**, S. Sasikumar, R.Saravanan and S. Israel
III National Conference on Advanced Materials, PSN College of Engineering and Technology,
Tirunelveli, January – 2013.

11

Electronic structural analysis of melt grown dilute magnetic semiconductor Ge_{1-x}Co_x
R.A.J.R. Sheeba, R. Saravanan and L. John Berchmans
III National Conference on Advanced Materials, PSN College of Engineering and Technology,
Tirunelveli, January – 2013.

10

Charge density analysis of the melt grown dilute magnetic semiconductor Ge_{1-x}V_x
R.A.J.R. Sheeba, R. Saravanan and L. John Berchmans
National seminar on Technologically important crystalline and amorphous solids (TICAS – 2012),
Kalasalingam Univerisy, Krishnan Kovil, March – 2012, Abstract no: OP 15.

9

Experimental charge density determination in iso-structural Tellurides:*Hf_{0.85}GeTe₄ and ZrGeTe₄*
S. Israel, S. Saravanakumar, **R.A.J.R. Sheeba** and R. Saravanan
National seminar on Technologically important crystalline and amorphous solids (TICAS – 2012),
Kalasalingam University, Krishnan Kovil, March – 2012, Abstract no: PP 21

8

Multipole analysis of Charge density in a pharmaceutical solid system: Tolbutamide
S.Israel, C. Anzline and **R.A.J.R. Sheeba**
International conference on recent trends in Advanced Materials, Vellore Institute of Technology
University, Vellore, February – 2012, Abstract No: BMS Pr-11

7

Preparation of Si_{0.98}Mn_{0.02} using Ball milling technique and its charge density analysis.
R.A.J.R. Sheeba and R. Saravanan.
International conference on recent trends in Advanced Materials, Vellore Intstitute of Technology
University, Vellore, February – 2012, Abstract No: FMM Pr-04

6

High temperature growth and X-ray characterization of the diluted magnetic semiconductor $\text{Ge}_{1-x}\text{Mn}_x$

R.A.J.R. Sheeba, R. Saravanan and L. John Berchmans

International conference on advanced materials and applications (ICAMA-2011), March 2011, Kalasalingam University Krishnan Kovil, Abstract no: M-4-P

5

Electronic structure of Nano-sized $\text{Cd}_{1-x}\text{Mn}_x\text{S}$ from experimental charge density

S. Israel, K.S. Syed Ali, **R.A.J.R. Sheeba**, P. Sathyasree and R. Saravanan.

International Conference on active/smart materials. Thiagarajar College of Engineering, Madurai, January 2009, Abstract No: Smart: 346

4

Debye –Waller factors from phonon density of states

S. Israel and S. Senthil Kumaran, **R.A.J.R. Sheeba** and K.S. Syed Ali

National seminar on Crystal growth of Laser and Non-linear optical materials (NSCGOM-2008), National College, Trichy, September 2008, Abstract No: 38.

3

Growth and characterization of Mn doped ZnSnSb_2 single crystals

S. Israel, M. Parameshwari, S. Senthil Kumaran, **R.A.J.R. Sheeba** and K.S. Syed Ali

National seminar on Crystal growth of Laser and Non-linear optical materials (NSCGOM-2008), National College, Trichy, September 2008, Abstract No: 39.

2

Synthesis and characterization of $\text{Cd}_{1-x}\text{Mn}_x\text{S}$ nano crystals

S. Israel, P.Sathyashree, K.S.Syed Ali, S. Senthil Kumaran and **R.A.J.R. Sheeba**

National seminar on Crystal growth of Laser and Non-linear optical materials (NSCGOM-2008), National College, Trichy, September 2008, Abstract No: 40.

1

Experimental electron density in GaP at RT and 200K from single crystal X-ray data

S. Israel, K.S. Syed Ali, **R.A.J.R. Sheeba** and R. Saravanan.

12th National seminar on Crystal growth, SSN college of Engineering, SSN Nagar, December 2007, Abstract No: P17 (2).

Workshops/seminars attended:

1. A three – day State Level Seminar on “Thrust areas in Material Science” organized by the Department of Physics, Lady Doak College, Madurai, from 15th – 17th July 2004.
2. A one – day Regional level seminar on “Recent trends in Physics and Electronics” organized by the Department of Physics and E & C at N. M. S. Sermathai Vasan College for Women on 14th December 2005.

3. A two – day State Level Seminar on “Condensed Matter Physics” organized by the Department of Physics at Yadava College on 22nd and 23rd February 2006.
4. A one – day National Level Seminar on “Application of Nanotechnology” organized by the Department of Physics, V. V. Vanniaperumal College for Women, Virudhunagar, 21st September 2006.
5. A three – day National Level Seminar on “Crystal Growth” organized by Centre for crystal growth, SSN College of Engineering, Chennai, on 21st – 23rd December 2007.
6. A one – day workshop on “Physics concepts through interactive animation” organized by Indian Association of Physics Teachers, TN and Puducherry, held at the Department of Physics, The Madura College, Madurai on 25th February 2011.
7. A two – day workshop on “Research methodology, writing practices and language skills” organized by Kerela State council for science, technology and environment, Thiruvananthapuram on 3rd and 4th August 2012.
8. A one – day National level seminar on “Recent trends in Physics and Chemistry” organized by the Departments of Physics & Chemistry, The Madura College, Madurai on 1st March 2017.
9. Two Day Online International Workshop on “Nanomaterials for Clean Energy and Space Astronomy (IWNCEA-2022)”, organized by the Department of Physics and Ethiraj College Astronomy Club, Ethiraj College for Women, in association with The Indian Science Congress Association, Chennai Chapter, Tamil Nadu, India, on 22.02.2022 and 23.02.2022.

Faculty Development Programs (Online):

1. Seven days of online Faculty Development Programme on “Evolution of Functional materials and their effective characterization towards diverse Engineering applications”, organized by Department of Physics, Kumaraguru College of Technology, Coimbatore, Tamil Nadu, from 22.06.2020 to 29.06.2020
2. Three days Faculty Development Programme on “Advanced Materials for Energy, Environment and Healthcare applications” organized by SIT Research Forum, Pulloor, Kariapatti, Virudhunagar, Tamil Nadu, from 29.06.2020 to 01.07.2020.
3. Six days Faculty Development Programme on “Recent Trends in Materials Physics” organized by Karpagam Academy of Higher Education, Coimbatore, Tamil Nadu, from 22.06.2021 to 28.06.2021.
4. One week Faculty Development Programme on “Carbon Capture and Storage”, organized by the Department of Chemistry, Central University of Tamil Nadu, Thiruvarur, India from 21.02.2022 to 25.02.2022.

Webinars attended:

1. International webinar on “Recent trends in advanced material science – RTAMS – 2020”, organized by Post Graduate & Research Department of Physics, The American College, Madurai on 19.06.2020
2. International webinar on “Crystal Growth and After: Structure and bonding in magnetic materials”, organized by Department of Physics, Hindusthan College of Engineering and Technology, Coimbatore on 20.06.2020
3. Silver Jubilee International webinar organized by Department of Physics, Sri Akilandeswari Women’s College, Wandiwash, Tamil Nadu on 20.06.2020
4. Webinar on “An overview on characterization techniques of crystal growth”, organized by Department of Physics, Easwari Engineering College, Ramapuram, Chennai on 26.06.2020
5. International webinar on “Recent Advances in Materials Science and Technology”, organized by Department of Physics, Aditanar College of Arts and Science, Tiruchendur on 26.06.2020
6. National webinar on “Emerging Applications of nano structured devices”, organized by PG Department of Physics, Arulmigu Palaniandavar College of Arts and Culture, Palani on 27.06.2020
7. International webinar on “Advanced Materials for sustainable future”, organized by PG Department of Physics, Hajee Karutha Rowther Howdia College, Uthamapalayam, Theni on 29.06.2020
8. National level webinar on “Stable organic – inorganic Hybrid Halide Perovskite nanocrystals for LEDs”, organized by PG and Research Department of Physics, Thiagarajar College, Madurai on 03.07.2020
9. Webinar on “Emergence of Multidisciplinary Approach in Research – A Global context”, organized by the Department of Physics, School of Advanced Sciences, Kalasalingam Academy of Research and Education, Krishnankoil on 12.07.2020
10. International webinar on “Frontiers in Nanotechnology and Applications (FINA 2020)”, organized by Department of Physics, St. Xavier’s College, Palayamkottai on 15.07.2020
11. Webinar on “Preparation methods and deposition techniques of nanostructures”, organized by the PG Department of Physics, V.O.Chidambaram College, Thoothukudi on 16.07.2020
12. National level webinar on “Recent Techniques on Single Crystal Growth and its Characterisation”, organized by the Research Centre and PG Department of Physics, The Madura College, Madurai on 21.07.2020
13. Webinar on “Current energy scenario and its importance”, organized by Department of Physics, School of Advanced Sciences, Kalasalingam Academy of Research and Education, Krishnankoil on 21.07.2020
14. Webinar organized by the Ladies club of The American College, Madurai on 27.05.2020
15. Webinar on “Women at Risk Blossom”, organized by the Ladies club of The American College, Madurai on 09.06.2020
16. Webinar on “Self awareness and Social responsibility during COVID 19 pandemic”, organized by the Ladies club of The American College, Madurai on 13.06.2020

- 17.** National level webinar on “Teacher Vs Learner: Impact of COVID’19 in Colleges”, organized by IQAC, The American College, Madurai on 22.07.2020
- 18.** National seminar on “Recent Advancement in Material Science”, organized by Department of Physics, V. V. Vanniaperumal College for women, Virudhunagar on 14.03.2022.

Head of the Department

(Dr. D. DURAI MANOHARADOSS PRABAHARAN)

Dr. R.A.J.R. SHEEBA