



Dr. K. Gurunathan
Professor & Head

Contact

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Academic Qualifications: M.Sc., Ph.D.

Ph.D (Chemistry-Energy) Highly Commended, 1994, University of Madras, Chennai

M.Sc (Chemistry), 74 %, 1986, Madurai Kamaraj University, Madurai

B.Sc (Chemistry), 79%, 1984, Madurai Kamaraj University, Madurai

Teaching Experience: 12 Years

Research Experience: 27 Years

Additional Responsibilities

1. Member of Syndicate
2. Member of Senate
3. Member of Standing Committee
4. Member of IQAC

5. Member of University & Dept. Admission committee
6. Member of University & Dept. Purchase committee

Areas of Research

1. 1.Nanomaterials for Lithium battery, supercapacitors and solid oxide fuel cells &Microbiofuel cells
2. Molecular electronics and Organic-Inorganic Hybrid solar Cells
3. Nanomaterials for Resistors, solders and conductors for Hybrid Microcircuits
4. 4. Preparation, Characterisation and Applications of Graphene & reduced graphene oxide (rGO) Semiconductors, Electroceramics, Conducting Polymers, Nanocomposites of Conducting Polymer/Electroceramics.
5. Electroless and electroplating of Metals and Alloys.
6. Hydrogen production via Photocatalysis, Photoelectrochemical and Photobiocatalysis, Hydrogen energy storage materials
7. Core-Shell Nanomagnetism, Nanotoxicology, Quantum dots & Core-shell Solar cells, Phyto- chemical synthesis of nano-metals, bimetallics etc.
8. Phytochemical synthesis of nanomaterials for Antimicrobial studies and Bio-film studies

Research Supervision / Guidance

Program of Study		Completed	Ongoing
Research	Ph.D.	4	7
	M.Phil.	14	1
Project	PG	23	2
	UG / Others	5	1

Publications

International		National		Others
Journals	Conferences	Journals	Conferences	Books / Chapters / Monographs / Manuals
65	102	5	66	-

Cumulative Impact Factor (as per JCR) : 251
h-index : 10

i10 index : 12
 Total Citations : 972

Funded Research Projects

Completed Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	VSSC/ISR O	2003	2004	Development of Nanosized RuO ₂ .xH ₂ O for Supercapacitors Application	4.21
2	NPSM	2003	2005	Technology Demonstration of Multilayer LTCC Packages for MEMS Application	525.00
3	Indo-Mexico (DST)	2005	2008	Fabrication and Characterization of Organic-Inorganic(Polythiophene-Nano CdS & CdSe) Hybrid materials for Solar cells	4.70
4.	UGC	2011	2014	Photobiological production of hydrogen fuel and micro bio fuel cell fabrication”	5.48

Ongoing Projects- Nil

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	AURF	2017	2018	Design and Development of Nanosensors for Medical Diagnosis	3.00

Patents

Conducting Polymer/ Transparent Oxide composite for Rechargeable Battery

Distinctive Achievements / Awards

1. Awardee of BOYSCAST Fellowship (DST, New Delhi) for the year 1999-2000. The work was carried out in University of Texas at Austin, Austin, TX, USA during March 2000-March 2001 in Lithium battery, Supercapacitor and cathode materials for Solid oxide fuel cell.
2. Awardee of Brain Pool scientist by Brain Pool program of KOFTS, South Korea, during July 2005-June 2006 in “ Development of Efficient Visible photocatalysts for Hydrogen Generation” The work was carried out in Korea Research Institute of Chemical technology (KRICT), Daejeon, S. Korea.
3. Awardee of First prize for Poster Presentation of our paper presented in two days National seminar on Recent advance in Nanoscience (RANS-2008) held at Sub-Center at Osmanabad of Marathwada University (Feb 23 &24, 2008).
4. Awardee of Best Poster presentation of our paper presented in Ist International conference on Functional materials for Defence -2012 (ICFMD-2012) , organised by DIAT, during May 18-20, 2012, Pune.
5. Awardee of “ Rastriya Nirman Rattan” by Economic Growth Society of India, Delhi awarded during the National seminar on “ Individual achievements for Economic & Social Development” on 26th August, 2012 at Delhi.
6. Awardee of “National Health leadership Award” by Health and Education Development Association, Delhi, 2012 for Outstanding Individual achievement & distinguished services to the nation during December 23, 2012.
7. Awardee of “Asia-Pacific Global Award”, Global Achievers Foundation for Individual contribution for International Integration during Indo-Thailand seminar on “ Global Achievers Summit” on 4th January, 2013 in Bangkok, Thailand .
8. Listed in Marquis Who’s who in Science and Engineering published by Marquis, USA, 2006-2007 and Who’s Who in the World published by the same on upcoming 2009(26th Edn.)
9. Awardee Institute –RA in CECRI, Karaikudi, (1995-1997).
10. Direct CSIR-SRF from CSIR, India, 1991-1993
11. Awardee of Student Membership from Electronic Division of Electrochemical Soc, Inc, USA, 1991-1994

Events organized in leading roles

Number of Seminars / Conferences / Workshops / Events organized: 15

1. Convener, National Symposium on Importance of Nanoscience and Nanotechnology during March 14 &15, 2009,
2. “International Colloquium on Emerging Biotechnologies in Agriculture, Animal health and Productivity” (ICEB 09) February 22-27, 2009, Department of NanoScience and Technology, Jointly organized with School of Biotechnology Alagappa University, Karaikudi, INDIA.
3. Convener, International conference on Advancement of Nanoscience and Nanotechnology (ICOANN-2010) during March 1-3, 2010
4. Convener, National science Day (NSD) on February 28, 2011.

5. Convener, World Intellectual property Rights (IPR) Day on 26 April 2012
6. Convener, World Standards Day (WSD)-2012 on 19.10. 2012
7. Convener, World Standards Day (WSD)-2013 on 05.11. 2013
8. Convener, World Standards Day (WSD)-2014 on 14.10. 2014
9. Convener, Workshop on“High Performance Computing (HPC) - Code Modernization” on 21.08. 2015 & sponsored by Intel and CALLIGO TECHNOLOGIES, Bangalore.
10. Convener, Small Industry Day (SID)-2015 on 31.08. 2015.
11. Convener, Int. Conference on FACTs-2016 to be held on 21-23 March, 2016
12. Convener, World Standards Day (WSD)-2016 on 10.1. 2017
13. Convener, Two days National Seminar on “ Nanomaterials for Specialized Applications (NMSA-2017) ON 09.01. 2017.

Events Participated

Conferences / Seminars / Workshops: 166

1. K. Dhanabalan and **K. Gurunathan**, “ Mild synthesis of Fe₂O₃/CdS Nanoparticles and their magneto-luminescence studies. Paper presented in Ist International conference on Functional materials for Defence -2012 (ICFMD-2012), organised by DIAT, Pune during May 18-20, 2012. **Awarded Best Poster Presentation for above work.**
- 2) D. Packiya nathan, A. Rajesh and **K. Gurunathan**, “ Synthesis and magneto-luminescence studies of biocompatible Maghemite-Hydroxyapatite (HAP) core-shell nanoparticles”, Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.
- 3) T. Banu Priya, A.Rajesh, K. Gopinath, A. Arumugam and **K. Gurunathan**, “Synthesis and characterization of CdS and CdZnS nanoparticles by co-precipitation method and their Larvicidal Activity” Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.
- 4) G.Siva Prakash, S.Muthukkumarasamy and **K.Gurunathan**, “Phytochemical bioreduction of silver by *phyllanthus Niruri* and its studies of anti-microbial & anti-biofilm activity” Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.
- 5) S. Muthukkumarasamy and **K. Gurunathan**, “ Phytochemical profiling, Green Synthesis of Silver Nanoparticles using *Cardiospermum helicacabum* L and its anti-biofilm activity against *Escherichia coli* ATCC 25922” Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.
- 6) R.Sampath Ganesh, S.Muthukkumarasamy and **K.Gurunathan**, “Biosynthesis And Characterization Of Silver Nanoparticles using Fresh Water Cyanobacterium, *Oscillaporia annae*” Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.

7) M. Sudha, A. Rajesh, K. Gopinath, A. Arumugam, **K. Gurunathan**, "Synthesis, structural and optical and cell toxicity studies on HeLa and Hep 2 cells by Graphene oxide Nanoparticles" Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.

8) K. Dhanabalan and **K. Gurunathan**, "Non- ionic surfactant mediated of CdS semiconductor Nanoparticles", Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.

9) V. Madhavi, S. Sasikala, M. Ramalakshmi, **K. Gurunathan**, S. Karuppusamy and P. Shakkthivel, "Nanoflakes of Mn₃O₄ :Synthesis by novel precipitation method and their characterization" Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013.

10) J.Suganya, M.Ramalakshmi, **K.Gurunathan**, S.Karuppusamy and P.Shakkthivel, Dual Transition metal ions doped LiMn₂O₄ as cathode material for Lithium ion batteries, Paper presented by poster in International conference on RATES-2013 held at Alagappa University, Karaikudi during March 21-23, 2013

11) **K. Gurunathan** and K. Dhanabalan, Symp code: BCT, Paper ID: 2016 - "CdS Nps for antibiofilm efficacy against Escherichia coli ATCC 25922"

Paper accepted for poster presentation in ThinFilms2014, 15-18 July 2014, Chongqing, China Thin Film 2014, China.

12) S.Muthukkumarasamy and **K.Gurunathan**, "Phytosynthesis and characterization of Silver Nanoparticles using *Cardiospermum helicacabum* L and its antibiofilm activity against *Escherichia coli* ATCC 25922". Paper accepted for Poster presentation in Faraday Discussion 175: Physical Chemistry of Functionalised Biomedical Nanoparticles to be held during 17-19 September, 2014 at University of Bristol, UK.

13) T. Sahasivam and **K.Gurunathan**, "A facile synthesis and thermal properties of Graphene Oxide – Mischmetal Oxide Nanocomposites". Paper presented for Poster presentation in Faraday Discussion 175: Physical Chemistry of Functionalised Biomedical Nanoparticles to be held during 17-19 September, 2014 at University of Bristol, UK

14) R. Kalyani and **K. Gurunathan**, Study Of The Photocatalytic Effects Of Cation Substituted CdS Nanoparticles Stabilized By Polythiophene/Polyethylene Matrix. Given an Invited talk in the 6th International Conference on "Advancements in Polymeric Materials-APM-2015" held during February 20 to 22, 2015 at Indian Institute of Science, Bangalore.

15) The following papers are presented in International Conference on FACTS-2016 to be held on 22-24 March, 2016 organised by Dept. Of Industrial chemistry, Dept. Of Nanoscience & Technology and Dept. of Bioelectronics and Biosensors.

Regina.R, Heiner.A.J and Gurunathan.K, Synthesis And Characterization Of Polythiophene - Zinc Oxide Nanocomposite For Oxygen Sensing Application

16) Analytical Studies On Polystyrene methylmethacrylate Poly(Sty-MMA)-Poly(vinyl Chloride) Polymer Electrolytes with lithium Salts C.Balalakshmi, J.B.A.J. Helen Thesere and **K. Gurunathan**

17) Synthesis And Characterization Of Fe-TiO₂ / Polyanilecore-Shell Nanostructurefor Photocatalytic Hydrogen Production, C. Meyyathal, R. Kalyani and **K. Gurunathan**

18) Synthesis And Characterisation Of Core- Shell Of ZnSse/ ZnS For Solar Cell Application, G. Ganesh Priya, R. Kalyani and **K. Gurunathan**

19) Sol-Gel Based Synthesis And Characterization Of Photoactive Nanocrystalline ZnO Thin Films For Hydrogen Production, R. Kalyani and **K. Gurunathan**

20) Photocatalytic Dye Degradation Of Transition Metal Ions (Co, Cr, Cu) Doped Tion Nanocomposites, T. Pushpa, R. Kalyani and **K. Gurunathan**

21) Nanostructured based on organic – inorganic hybrid composites for high-performance Supercapacitor, M. Arun Prabhu and **K. Gurunathan**

22) Synthesis, Characterization Of Hemetite Nps Decorated N-Doped Graphene Sheet/Mos₂ Nanocomposite For Photocatalytic Application, S.Senthilnathan, S. Sivasakthi and **K.Gurunathan**

23) Synthesis, Characterization Of Hemetite Nps Decorated N-Doped Graphene Sheet/Mos₂ Nanocomposite For Photocatalytic Application, Ishimwe Francoise and **K. Gurunathan**

24) Studies On Solid Polymer Electrolytes Added With Nano Fillers, T.M. Amarnath, J. B.A. J. Helen Therese and **K.Gurunathan**

25) Different dimensional semiconductor nanocomposites, G. Ramalingam and **K. Gurunathan**

26) The following papers were presented in National Conference on Nanotechnology and Biosensors -2011 held on March 3&4, 2011 in Alagappa University, Karakikudi.

27) C. Govindasamy , L.John Berchmans and **K. Gurunathan**, Synthesis of Strontium doped Lithium Zirconate Powders by Molten Flux Method

28) V. Thirumal, K. Ramkumar, S. Angappan, A. Visuvasam and **K. Gurunathan**, Preparation of Carbon Nanotubes by molten salt technique

29) A. Rajesh and **K. Gurunathan**, MAGNETIC AND OPTICAL STUDIES ON Gd-HAP COATED MAGNETIC (Gd-HAP- γ -Fe₂O₃) NANOPARTICLES

30) P.Ramesh, C.Priya, S.Muthukkumarasamy and **K.Gurunathan**

Synthesis and antimicrobial studies of silver nanoparticles

31) **K. Gurunathan**, Invited speech on “ Polymers for physics application” and chief guest for Valedictory function UGC sponsored National seminar held at June, 2011 in Thirumalai Mannar college Madurai.

- 32) **K. Gurunathan** Invited speech “Nanotechnology for Life sciences” for UGC sponsored National seminar on recent advances in Life sciences (RAIL-2011) held at Rajah’s college Pudukottai during December 28&29, 2011.
- 33) **K. Gurunathan** Inaugural address and invited speech on “Recent advances in Nanobiotechnology” in National level symposium on Nanotechnology & Nanobiotechnology : Future Perspectives & Challenges (BIOKRIEG’12) held at St. Michael’s college of Engineering, Kalaiyarkoil on 29.02. 2012.
- 34) R. Kalyani, K. Dhanabalan and **K. Gurunathan**, “Synthesis and Characterization of core shell structure CdS/ZnS Solar cell applications” Paper poster presented in Recent advancements in Nanomaterials for Sensor applications (NANOSE-12) organised by Dept. of Bioelectronics and Biosensors, Alagappa University, Karaikudi-3 during March 8 &9, 2012.
- 35) R.V. Saranya, S. Muthukkumarasamy and **K.Gurunathan**, “PHYTO-FABRICATION OF Ag, Au and Au CORE Ag SHELL NANOPARTICLES USING BROTH OF *Psidium guajava*”. Paper presented by poster in Recent advancements in Nanomaterials for Sensor applications (NANOSE-12) organised by Dept. of Bioelectronics and Biosensors, Alagappa University, Karaikudi-3 during March 8 &9, 2012.
- 36) M.Pandia Rajathi, Muthukkumarasamy S and **K.Gurunathan**, “Phytochemical Profiling And Bioreduction Efficacy of *Cassia auriculata* (Aavarai) in Synthesis of Silver Nanocubes”. Paper presented by orally in Recent advancements in Nanomaterials for Sensor applications (NANOSE-37) organised by Dept. of Bioelectronics and Biosensors, Alagappa University, Karaikudi-3 during March 8 &9, 2012.
- 38)A. Rajesh and **K. Gurunathan**, Structural and Magnetic Resonance Study of Gd₂O₃/NiFe₂O₃ Core-Shell nanoparticles. Paper presented in National conference on magnetic materials MAGMA-2012-IIM held at IIT-Madras during March 12&13, 2012.
- 39)R. Kalyani, K. Dhanabalan and **K. Gurunathan** “Synthesis And Characterization Of Cds-Zns Nanomaterials For Solar Cells Application” Paper presented in National conference on “ Chemistry of Chalcogens (NC3-2013) DIAT (DU), Pune.
- 40) A. Rajesh and **K. Gurunathan**, “Synthesis and Characterization of Graphene-Hydroxyapatite (GPHAP) nanocomposites” Paper accepted for poster presentation in Recent trends in Materials -2013 (RTMC-2013) organised by VIT, Vellore during 27-29 July, 2013.
- 41) K. Dhanabalan and **K. Gurunathan**, “Photobiological hydrogen production from green algae of cyano bacteria coupled with Core-shell CdS/ZnS. Paper presented in presentation for Hydrogen Energy Association and Materials-2013 (HEAM-2013) to be held on December 12-13, 2013 in Dept. Of Chemistry, University of Kerala, Trivandrum.
- 42)**K. Gurunathan**, Hydrogen production by photobiologically and its impacts and

challenges” an invited talk in National level Annual young scientist meet of **Hydrogen Energy and Advanced Materials (HEAM-2013)** during December 12 & 13, 2013 at Dept. of Chemistry, University of Kerala, Trivandrum.

43) **K. Gurunathan**, “Emerging concepts on Nanoscience & Nanotechnology Part-I & Part-II” Invited talk on Refresher course on “Frontier in Chemistry 2014” held on 5th January 2014 organized by Dept. of Chemistry & Academic staff college by Bharatha Dasan University.

44) G. Siva prakash and **K. Gurunathan**,” Biogenic synthesis of Antimicrobial silver nanomaterials using the broth of *Phyllanthus niruri* (L) Murr.” presented as poster presentation in Recent Nanomaterials for sensor applications (NANOSE-2014) held on March 6-7, 2014 organised by Dept. of Biosensors and Bioelectronics, Alagappa University, Karaikudi.

45) T. Sadhasivam and **K. Gurunathan**, “Advantageous of Nanostructured Magnesium and Polymer Composite” presented for oral presentation in HEAM 2014 organised by Dept. of Chemistry, University of Kerala, Kerala during November 17, 2014.

46) R.Kalyani and **K.Gurunathan**, “Spectroscopical Studies on Chemically Synthesized Photoactive Nano Transition Metal Semiconductor Interfaces”. Paper presented by oral presentation in National Conference on Chemistry for Sustainable Energy, Clean Environment and Health (CEEH) to be held on 21 & 22 January 2015 organised by your dept. of Chemistry, M.S. University, Trinelveli.

47) R.Kalyani and **K.Gurunathan**, “RESISTANCE STUDIES OF NANO-HYBRID THIN FILM MATERIALS FOR PHOTOVOLTAIC APPLICATIONS” Paper orally presented for NCETAP-2015 to be held on 20-22, February 2015 in Lekshmipuram college of Arts and Science, Lekshmipuram, Neyyoor.

48) S. Sivasakthi, T. Sadhasivam and **K. Gurunathan**, “Synthesis and Electrochemical studies on Graphene oxide/CaRuO₃ Nanocomposite”. Paper presented by poster presentation in “FACTS-2015” organised by Industrial chemistry, Alagappa University, Karaikudi during March 6&7, 2015.

49) N.S. Kavitha, K. S. Venkatesh, R. Ilangovan and **K. Gurunathan**, “ Biosynthesis and characterization of WO₃ nanoparticles by using plant pathogens fungus *Fusarium solani*” paper presented by poster in National conference on Advanced Functional Materials (NCAFM-2015) held on May 8&9, 2015 organised by Dept. of Physcis, SRM University, Chennai-26.

50) C. Balalakshmi, JAJ. Helen Therese and **K. Gurunathan**, “ Preparation and characterization of LiMn₂O₄ electrodes using Polyol Process”, First symposium on AFM-2016 (Energy Conversion and Storage) held during May 26-28, 2016 at CECRI, Karaikudi.

51) G. Ramalingam, P. Kathirgamanathan and **K.Gurunathan** “Core@Shell for Quantum Dots for Q- LED Applications “ paper orally presented in National conference on

Preparation and characterization of crystalline Materials to be held on Aug.4&5, 2016 organised by Dept. of Physics, Govt. Arts college, Thiruvannamalai.

52) A.J. Heiner and K. Gurunathan, "Room Temperature Oxygen Gas Sensor based on CuO-ZnO p-n junction loaded Polypyrrole Nanocomposite" Paper accepted in International Conference on "Advancements in Polymeric Materials (APM-2017)" to be held at Indian Institute of Science, Bangalore during February 12-13, 2017

53) Heiner.A.J, Gurunathan.K, "**Mixed Metal Oxide loaded Polypyrrole Nanocomposite for Room Temperature Oxygen Sensing Application**". Paper accepted for HEAM-2017 conference held on University of Kerala, Thiruvananthapuram during 25-28 February, 2017.

54) M. Sivakumar and K. Gurunathan, "**Water Soluble Core@ShellFe₃O₄@DyF₃:Yb, Er Nanoparticles for high field Magnetic Resonance Imaging, Computed Tomography, and Upconversion Luminescence Imaging**". Paper accepted in International conference on Renewable Energy Science and Technology to be organised by Dept. of Energy science, Alagappa University during March 10&11, 2017.

Overseas Exposure / Visits

U. S. A	University of Texas at Austin, Austin, Texas	March 2000- March 2001	BOYSCAST (DST)	To Execute work on "Oxides and Nano-Composites for Lithium battery, supercapacitors and Solid oxide fuel cell" under the supervision of Prof.A. Manthiram in Prof. J. B. Goodenough Lab.
S. Korea	Korea Res. Inst. Chem. Tech (KRICT), Daejeon	July 01, 2005-June 14, 2006	Brain Pool Scientist by KOFTS	To Develop Efficient Visible micro& Nano photocatalysts for Hydrogen Generation and photoelectrodes for Solar Hydrogen & Electricity Generation by SC-SEPTUM cells under the Guidance of Dr.JinOok Baeg.

Membership in

Professional Bodies

1. Life Fellow in Society of Advancement of Electrochemical Science and technology (SAEST), CECRI, Karaikudi, from 1988 to tilldate
2. Life fellow in Materials Research Society of India (MRSI), Bangalore from 1999 onwards
3. Life Fellow member in Indian science Congress Association (ISCA), Kolkotta,2009 onwards

4. Life fellow of Electronic Society of India, 2010
5. Life fellow of International Society of Nanoscience & Nanotechnology, 2010
6. Life fellow of Indian Nano-biologists Association, 2012

Editorial Board

1. Associate Editor, Kenkyu Journal of Nanotechnology and Nanoscience
2. Associate Editor, Journal of Microbial and Biochemical informatics, published by Bioveritaz corporation, 2014, India
3. Associate Editor , World Research journal Bio-Process Technology, Bio-Info-Publications
4. Associate Editor, Nanotechnology and Nanoscience, Bio-Info- Publications
5. Editorial Member, Materials Science-*An Indian Journal* published by Trade Science Inc., India.
6. Editorial Member, Int. J. Nanotechnology & Nanoscience published by SERC, USA.
7. Editorial Member, Indian J. Natural Sciences published by TN Sci. Res.Org., Arimalam.

Advisory Board

1. Scientific Advisory committee in International conference on Nanoscience and Nanotechnology held at Colombo, Srilanka during September 2-4, 2015.
2. Technical Advisory Committee in International conference on Emerging Environment and Advanced Oxidation Technologies for Energy, Environment Sustainability (EEOATEES-2014) held at Anna University, Chennai-25 during September 29 & 30, 2014.
3. Organising committee member of International conference on Renewable Energy Science and Technology to be organised by Dept. of Energy science, Alagappa University during March 10&11, 2017.
4. Organizing Committee Member(OCM) for the International conference on Nanomedicine-2017 on November 6-7, 2017 at New Orleans, USA organised by Allied Academic meetings.

Academic Bodies (such as Board of Studies etc.,)

- **Chairman**, Board of studies in Nanoscience & Technology, Alagappa University both M.Sc(Nano) and M.Phil (Nano)
- Chairman, Integrated Board of Studies in M.Sc(Chemistry) with specialization in Nanoscience & Tech. and Energy sciences.

- **Member**, Broad Basis Board of Studies in Industrial chemistry, Alagappa University, Karaikudi
- **Member**, Board of studies in Nanoscience & Technology, Ayya Nadar Janakiammal college, Sivakasi
- **Member**, Board of studies in Nanoscience & Tech., Yadava college, Madurai
- **Member**, Board of studies in Sri paramakalyani Centre for Environmental science, M.S. University, Alwarkurichi
- **Member**, Board of Studies in Nanoscience & Technology, M.S. University, Trinelveli
- **Member**, Pre-tender committee, CECRI, Karaikudi for the purchase of IPCE and XRF

Resource persons in various capacities

Number of Invited / Special Lectures delivered: 20

1) **K. Gurunathan**, Valedictory address and invited talk entitled “ Nanomaterials for Hybrid microcircuits and solar cells” in 2nd National conference on Environ Nano-2011 organised by Sri Paramakalyani centre of excellence in Environmental sciences, M.S. University, Trinelveli during February 4&5, 2011.

2) **K. Gurunathan**, Inaugural address and invited talk entitled “ Application of Nanotechnology in current Agricultural practices” in NANO-FARM-2011 National SEMINAR on Application of Nanotechnology in current Agricultural practices organised by Dept. of Biology, Dr. Zakir Husain college, Ilayankudi, Sivaganga District during February 9 &10, 2011

3) **K. Gurunathan**, Invited speech on “ Polymers for physics application” and chief guest for Valedictory function UGC sponsored National seminar held at June, 2011 in Thirumalai Mannar college Madurai.

4) **K. Gurunathan** Invited speech “Nanotechnology for Life sciences” for UGC sponsored National seminar on Recent advances in Life sciences (RAIL-2011) held at Rajah’s college Pudukottai during December 28&29, 2011.

5) **K. Gurunathan** Inaugral address and invited speech on “Recent advances in Nanobiotechnology” in National level symposium on Nanotechnology & Nanobiotechnology : Future Perspectives & Challenges (BIODIEG’12) held at St. Michael’s college of Engineering, Kalaiyarkoil on 29.02. 2012.

6) **K. Gurunathan**, Chairing the session on 22 March 2013 in **International conference on RATES-2013** held at Alagappa University, Karaikudi during March 21-23, 2013.

11) **K. Gurunathan**, Chairing the session in **Workshop on Innovative and Creative Approaches for Sustainable Development of India** organized by Industry and consultancy Cell, Alagappa University, Karaikudi during 30th April 2013.

7) **K. Gurunathan**, Invited talk given on” Photobiological production of hydrogen and its impacts and challenges” in **Second short term course on TEQIP “Energy and Environment issues for Cleaner environment”** organized by Dept. of Chemical Engineering, NIT, Trichi during December 2-3, 2013.

8). **K. Gurunathan**, Hydrogen production by photobiologically and its impacts and challenges” an invited talk in National level Annual young scientist meet of **Hydrogen Energy and Advanced Materials (HEAM-2013)** during December 12 & 13, 2013 at Dept. of Chemistry, University of Kerala, Trivandrum.

9). **K. Gurunathan**, “Emerging concepts on Nanoscience & Nanotechnology Part-I & Part-II” Invited talk on Refresher course on “Frontier in Chemistry 2014” held on 5th January 2014 organized by Dept. of Chemistry & Academic staff college by Bharatha Dasan University, Trichi.

10). **K. Gurunathan** STUDY OF THE PHOTOCATALYTIC EFFECTS OF CATION SUBSTITUTED CdS NANOPARTICLES STABILIZED BY POLYTHIOPHENE/POLYETHYLENE MATRIX. Invited talk in the **6th International Conference on "Advancements in Polymeric Materials-APM-2015"** theld during Feb. 20 - 22, 2015 at Indian Institute of Science, Bangalore.

11). **K. Gurunathan**, given the following two invited talks on 9.02. 2015 in **Refresher course on “Current Trends in Physics (CTP-2015)”** at School of Physics, Madurai Kamaraj University, Madurai during **Feb.3-Feb. 23, 2015**.

1.Supercapacitors-basic concepts-10.00am -11.30am &

2. Technological Approach on Supercapacitors-11.30am-1.00pm

12). **K. Gurunathan**, Chairing the Technical Session-IV on 07.01. 2015 of FACT-2015 held on March 6&7, 2015 organised by Industrial chemistry, Alagappa University.

13). **K. Gurunathan**, given Invited lecture on “ **Recent trends in Nanotechnology**” in One day workshop on Recent Advances in Chemistry and chairing the valedictory function held on 26.2. 2016 organised by Dept. of Chemistry, Sri Paramakalyani college, Alwarkurichi.

14). **K. Gurunathan** delivered Special address in “ **International Workshop on Data Science and Analytics**” organized by Dept. of Computer science, Alagappa University during 27&28 September, 2016.

15) **K. Gurunathan** delivered Special address in “ **International Workshop on Data Science and Analytics**” organized by Dept. of Computer science, Alagappa University during 27&28 September, 2016.

16) **K. Gurunathan** delivered Special address in “ **Two days Workshop on Micro propagation and commercialization of Medicinal Plants**” in Valedictory function organized by Dept. of Botany, Alagappa University during 30&31 January, 2017.

17) **K. Gurunathan** delivers valedictory address in Two days National conference on “ **New trends in Teacher Education : Pedagogical, Didactical Curriculum Design and Technological Innovations**” organized by Dept. of Education during February 6&7, 2017.

18) K. Gurunathan, "Room Temperature Oxygen Gas Sensor based on CuO-ZnO p-n junction loaded Polypyrrole Nanocomposite". Invited talk delivered in the **8th International Conference on "Advancements in Polymeric Materials- APM-2017"** held during Feb. 11 - 13, 2017 at Indian Institute of Science, Bangalore.

19) K. Gurunathan delivers Felicitations address in " **Energy conservation day -2016**" organized by Dept. of Energy Science on February 14, 2017.

20) K. Gurunathan delivers Felicitations address in Short Term training Program on " **Training and Scope of SCUBA DIVING**" organized by Dept. of Oceanography and Coastal Studies February 15 & 16, 2017.

21) K. Gurunathan delivers Felicitations address in Inaugural function of International conference on " **Mathematical Modeling and Computational methods in Science and Engineering (ICMCMSE-2017)**" organized by Ramanujam Centre for Higher Mathematics and Dept. of Mathematics during February 20-22, 2017.

22) K. Gurunathan delivers Felicitations address in " **Orientation Program**" for affiliated college organized by Study circle and Youth Empowerment centre during February 22, 2017.

23) K. Gurunathan delivers Felicitations address in " **Competition for Yoga- Inter-collegiate competition**" organized by Yoga centre during February 24, 2017.

24) K. Gurunathan delivers valedictory address in inaugural function of " **Alaghu Aaram-2017- Intercollegiate cultural competition**" organized by Cultural club and Youth Empowerment centre during February 24, 2017.

1. Articles published in Newspapers / Magazines : 1
2. Products developed : 10
3. No. of PhD Thesis evaluated : 15
4. No. of PhD Public Viva Voce Examination conducted : 10

Recent Publications

1. R. Kalyani, **K. Gurunathan (2016)**, Quantum Confinement Regime Of Mo- Polymer Nanostructures And The Inclusion Of r-GO Forming Effective Combination For Photocatalytic Applications, **Chem. Select, 1(16), 5230-5235**
2. R. Kalyani, **K. Gurunathan (2016)**, Intercalated Network Of Graphene Oxide (GO)-CuO- Polythiophene (Pth) Hybrid Nanocomposite For Photocatalytic Applications, **J. Materials Science : Materials for Electronics 27(10), 10634-10641**

3. R. Kalyani and **K. Gurunathan (2016)**, "PTh-rGO-TiO₂Nanocomposite for Photocatalytic Hydrogen Production and Dye Degradation" **J. Photochemistry and Photobiology A: Chemical** **329**, 105-112
4. Kalyani R, **Gurunathan K (2016)**, Nano – A Splendid Material for Overwhelming the Hurdles of Hydrogen (H₂)Production, **Kenk Nanotech. Nanosci 2: 9-11 (2016)**
5. R. Kalyani, **K. Gurunathan (2016)** "A Review on Plastic (Flexible) Solar Cells, **Kenkyu J Nanotec Nanosci 1: 100114**
6. R. Kalyani and **K. Gurunathan (2016)** "Metal Ions Doped & Polythiophene Coated Nanophotocatalysts: Synthesis And Spectroscopic Characterization For H₂ Production And Dye Degradation"**Optik****127,4741-4745**
R. Kalyani, G. Chockalingam and **K. Gurunathan (2016)**, " Tribological aspects of Metal and Metal oxides Nanoparticles **Advanced Science, Engineering and Medicine, 8, 228-232 .**
7. R. Kalyani and **K. Gurunathan (2015)**, "Graphene oxide based nanocomposites for nanotechnological applications" **Kenkyu J. Nanotec. Nanosci. 1:100101**
8. R. Kalyani and **K. Gurunathan (2015)**, Spectroscopical Studies on Chemically Synthesized Photoactive Nano Transition Metal Semiconductor Interfaces, **Kenkyu J. Nanotechnology and Nanoscience, 1:100107**
9. K. Dhanabalan and **K. Gurunathan (2015)**, Photobiocatalytic Hydrogen Production by using Cyanobacteria coupled with Nanoparticles of CdS and CdS/ZnS, **Advanced Science, Engineering and Medicine, 7, 667-671**
10. T. Sadhasivam and **K. Gurunathan (2015)**, Role of nano sized particles, catalytic additives and alternative/advanced techniques on Magnesium Hydride **Advanced Science, Engineering and Medicine 7, 1-17 (Review)**
11. A. Rajesh, M. Manivel Raja and **K. Gurunathan (2014)**, Structural and magnetic Characterizations of Hydroxy apatite- γ -Fe₂O₃ core-shell Nanoparticles, **Advanced Science, Engineering and Medicine 6,1171-1176**
12. A. Rajesh, Alo Dutta, **K. Gurunathan** and T. P. Sinha (2015), Dielectric relaxation of NiFe₂O₄/Gd₂O₃ Core-Shell nanoparticles,**J. Nanoscience & Nanotech., 15,6082-6087.**
- 13.T. Sadhasivam and **K. Guruanthan (2015)**, "A facile synthesis and thermal properties of Graphene Oxide – Mischmetal Oxide nanocomposites, **J. Nanoscience & Nanotech 15, 5676-5683.**
14. 15.K. Dhanabalan and **K. Gurunathan (2014)** , Size selective separation of CdS nanoparticles functionalized by methy methacrylate, **Ciencia e Tecnica Vitivinicola' journal, 29 (8), 253-284**

15. A. Rajesh, M. Manivel Raja, Sujoy Saha, T. P. Sinha and **K. Gurunathan (2014)**, "Synthesis, Physico-chemical and Electrical Characterizations of Graphene oxide-Hydroxyapatite Nanocomposites" **Advanced Science, Engineering and Medicine 6(10), 1076-1081**
16. K. Dhanabalan and **K. Gurunathan (2015)**, Neutral Microemulsion mediated synthesis and characterization of CdS NPs and its anti-biofilm efficacy against *Escherichia coli* ATCC 25922, **J. Nanoscience & Nanotechnology 15, 4200-4204**.
17. S. Muthukkumarasamy and **K. Gurunathan (2014)**, Eco-friendly Synthesis of Silver Nanoparticles using *Cardiospermum helicacabum* L and its antibiofilm activity against *Escherichia coli*, **Advanced Science, Engineering and Medicine 6(7), 765-770**.
18. A. Rajesh, M. Manivel Raja and **K. Gurunathan (2014)**, "Spin-Relaxation Studies of NiO Encapsulated Gd₂O₃ Core-Shell Nanoparticles" **Acta Metallurgica Sinica, 27(2), 253-258**
19. A. Rajesh, Alo Dutta, **K. Gurunathan**, T.P. Sinha (2014), Spin relaxation of Gd₂O₃/NiFe₂O₄ core-shell nanoparticles, **Nanoscience and Nanotechnology Letter 6(5), 450-455**.
20. T. Sadhasivam, M. Sterlin Leo Hudson, Sunita K. Pandey, Ashish Bhatnagar, Milind K Singh, **K. Gurunathan** and O. N. Srivastava (2013), Effects of nano size mischmetal and its oxide on improving the hydrogen sorption behaviour of MgH₂, **Int. J. Hydrogen Energy, 38, 7352-7362**
21. A. K. Chakravarthy, Chandrashekharaiyah, Subhash B. Kandakoor, Atanu Bhattacharya, K. Dhanabalan, **K. Gurunathan** and P. Ramesh (2012), Bio efficacy of inorganic nanoparticles CdS, Nano-Ag and Nano-TiO₂ against *Spodoptera litura* (Fabricius) (Lepidoptera: Noctuidae), **Current Biotica 6(3), 271-281**
22. K. Dhanabalan, Pawan Khanna, **K. Gurunathan**, N. Reji, V. Sowmya and V. Renugopalkrishnan (2012), Mild synthesis of Fe₂O₃/CdS nanoparticles and their magneto-luminescence studies, **Int. J. Green Nanotechnology 4, 457-462**
23. P. Ramesh and **K. Gurunathan (2012)**, Nanomaterials communication inside the living organism, **Nanocommunication Networks 3, 452-456 (Review)**
24. P. Ramesh, S. M. Samy, K. DHANABALAN, **K. GURUNATHAN (2012)**, SYNTHESIS AND CHARACTERIZATION OF AG AND TiO₂ NANOPARTICLES AND THEIR ANTI-MICROBIAL ACTIVITIES, **Digest J. Nanomaterials and Biostructures 7(4), 1501-1508**
25. S.M. SAMY, A.SHARADHA, S.VIGNESH, K. DHANABALAN AND **K.GURUNATHAN (2012)**, EXTRACELLULAR SYNTHESIS OF POLYGONAL SILVER NANOPARTICLES USING EXTRACT OF *ESCHERICHIA COLI* ATCC 25922 AND ITS ANTIBACTERIAL ACTIVITIES, **Digest J. Nanomaterials and Biostructures 7(4), 1419-1426**

26. K. Dhanabalan, S. Muthukumarasamy and **K. Gurunathan (2012)** "Cationic Micelles Capped Nanosized CdS Synthesis And Characterization" **Chalcogen Letters** **9(6),243-248**
27. Ramesh P, Muthukkumarasamy S, K.Dhanabalan, T.Sadhasivam and **K.Gurunathan (2011)**, Nanotechnology: Application, Nano-hazard and its Toxic effects, **E-Journal of Life Sciences,1(1),30 -38**
28. Visible light active pristine and Fe³⁺ doped CuGa₂O₄ spinel photocatalysts for solar hydrogen production, **K. Gurunathan**, Jin-Ook Baeg, Sang Mi Lee, E. Subramanian, Sang-Jin Moon, and Ki Jeong Kong (2008), **Int. J. Hydrogen Energy** **33, 2646-2652.**
- 29.**K. Gurunathan**, Jin-Ook Baeg, Sang Mi Lee, E. Subramanian, Sang-Jin Moon, Chul Wee Lee, and Hyunju Chang (2008), Visible light assisted highly efficient hydrogen production from H₂S decomposition by CuGaO₂ and CuGa_{1-x}In_xO₂ delafossite oxides bearing nanostructured co-catalysts, **Catalyst Commun.** **9, 395-402**