

Curriculum vitae
Professor Velumani Subramaniam PhD

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Summary of Curriculum Vitae – Velumani Subramaniam

Home page: <http://mreb.cinvestav.mx/>

After the graduation of Masters in 1986 started the career as a teacher and subsequently garnering Ph.D. in 1998, now raised to Teacher/Researcher/Administrator. In pursuit of achieving laurels and vying with novel ideas, presently working on novel micro and nanostructured materials for harvesting renewable energy and biomedical applications. In last 25 years, I've established various new programs, courses, won prestigious projects from different funding agencies and industries. Visited more than 25 countries as Director for International Relations (signed 80 MoU's) and to deliver plenary/invited talks and lectures, attaining global vision on education and administration. Published more than 140 papers in peer-reviewed international journals and serving as Editor (JSME) and edited about 11 special issues as guest editor. Serving as editorial board member and peer-reviewer for various reputed international journals. Served as visiting professor in University of Twente, Holland; Universite du Maine, France; and SKKU, South Korea on various occasions

I wish to summarize my achievements and classify it broadly into academic and administrative

Academic

1. **Projects executed:** Very strong collaborations in the USA and other countries, which is reflected by the TWO projects, won with US collaborators and others with the European Union. Served as PI for more than 20 projects (6 Industrial) and three major funds obtained recently are listed
 - i) Application of Solar thermal, Photovoltaic and photocatalysis for removing heavy metals from Drinking water – Design of a pilot plant – 27 Million Mexican Pesos (CONACYT-SENER –263043; 2016 to 2019) **(About \$1.7 Million USD)**
 - ii) Funding from CONACYT and CINVESTAV to the tune of 4 Million USD for setting up National Laboratory Microscopic facility (HRSEM & HRTEM) –completed in 2014 **(About \$4.6 Million USD)**
 - iii) Group Leader for the Project funded by CONACyT and the European Union for “Functionalities to Bismuth-based Nanostructures”; about 11 Million Pesos- completed in 2014. **(About \$1.1 Million USD)**
2. **Editor** Journal of Materials Science: Materials in Electronics, Springer Publications
3. **Areas of Expertise**
 - Synthesis, preparation and deposition of various metal and semiconductor (nanoparticles & thin films) nanostructured materials like CIGS, CdTe, CdSe, CIS, CZTS, CdZnS, ZnO, ZnO:Al, CdS, BiVO₄, BiVO₄-TiO₂, Fe₃O₄-TiO₂, Au-Fe₃O₄ core-shell

- structures by various chemical and physical techniques.
- Various characterization techniques like XRD, Spectrophotometer UV-Vis, Raman, FTIR etc), SEM, AFM, TEM, HRTEM, Electrical (I -V, C-V, photoconduction, QE, dielectric, etc.) etc.
 - Design and Simulation of various nanostructured material properties using Materials Studio (DFT, CASTEP) - specifically semiconducting materials for the photocatalytic and photovoltaic applications.
4. **Teaching experience** - more than 30 years in various conditions, environment, and countries. Handled more than 20 different courses at undergraduate to Doctoral level. Designed new courses in nanoscience and nanotechnology. Can handle
 - i) Basic Engineering physics courses from Resnick & Halliday; Serway & Jewett
 - ii) Fundamental Electronics & Digital Electronics
 - iii) Solid state physics and Materials science
 - iv) Renewable and sustainable energy
 - v) Nanostructured materials
 5. **Publications:** Published more than 140 International peer-reviewed articles and about 300 National/International conference presentations (*recently published two research papers in Nature Scientific report*) and three contributions in various book chapters
 6. **Thesis Guidance:** Guided 19 (11 completed & 8 under progress) Doctoral thesis, 17 Masters and 12 undergraduate theses.
 7. **Citations:** More than **1600 citations** of my published articles, Editorial board member/Peer reviewer of various leading international journals – which shows the importance of my scientific contributions and publications among the scientific community.
 8. Two years of **industry-oriented** research experience in the only petroleum Research Institute (Instituto Mexicano del Petroleo) – affiliated to PEMEX, Mexico.
 9. Delivered more than 35 plenary/invited lectures in various conference/countries and organized more than 30 international conferences as chairperson.
 10. Presently serving as an **editorial board member** in various prestigious international journals like Materials Science in Semiconductor Processing, Elsevier; NanoTrends- A journal of nanoscience and Nanotechnology; Advanced Materials, TransTech etc. Also served as guest editor for about 11 special volumes of publications from Elsevier, Springer, TransTech publishers etc.
 11. **Chairman** of the symposium on “Advances in Functional Semiconducting Materials” - an MRS USA-MRS Mexico –Joint conference – for last 10 years
 12. Awarded with **Young Scientist fellowship** during 1998 by Tamilnadu State Govt, India.
 13. Various short-term visits/sabbatical in University du Maine, France; University of Twente, Holland; and SKKU, South Korea
 14. Proficiency in Language:

Tamil: 100% written and 100 % spoken (Native)

English - 100% written and 100 % spoken

Spanish: 50% written and 80 % spoken

Administrative

15. **Founder and Director** of International Relations (CORI) – CINVESTAV from Jan 2008 to Nov 2013 – Have very wide contacts throughout South American, European and Asian Universities
 - i) Signed about 80 MoU's with different Universities/Organizations
 - ii) Organized Cinvestav-France joint workshops
 - iii) Organized Cinvestav-UK workshop
 - iv) Organization of various Cinvestav-Foreign University International Conferences
 - v) Promoted dual degree programs with various Universities especially with Spain and France
16. **Founder and Chairman**, Cinvestav Cricket Club -2010
17. **Founder and First Academic Coordinator** of the new MULTIDISCIPLINARY Ph.D. program on Nanoscience and Nanotechnology in CINVESTAV – 2009
18. **Founder and Coordinator** of the “National lab for Microscope” presently named as LANE, from 2009 to 2013
19. **Founder and Chairman** of the “Research Chair on Nanoelectronics” in ITESM, Monterrey 2006
20. **Founder of M.Phil** Course in Coimbatore Institute of Technology, 2000.

Name **VELUMANI SUBRAMANIAM**
Citizenship Mexico (Born in India)
Sex Male
Date of Birth 27th March 1963
Marital Status Married



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Research Gate: https://www.researchgate.net/profile/Velumani_S

I. Education:

Ph.D. Physics (Thin Film Physics) - Department of Physics, Bharathiar University, Coimbatore, Tamilnadu, India. – **1998** Specialisation: Thin film Physics

Thesis: Fabrication of hot wall deposition setup for CdSe films and characterization of the deposited films.

M.Phil. (Thin film Physics), Department of Physics, Bharathiar University, Coimbatore, Tamilnadu, India. – **1987** Specialisation: Thin film Physics

Thesis: Structural, conduction and dielectric properties of PbO thin films.

M.Sc. Physics, S.R.K.V. Arts College, Bharathiar University, Coimbatore, Tamilnadu, India. – **1985**. Specialisation: Electronics

Thesis: Digital speedometer- Work carried out at Premier Instruments Company, Ltd. (Pricol), Perianaickenpalayam, Coimbatore, Tamilnadu, India.

B.Sc. Physics, P.S.G. College of Arts and Science, An Autonomous college affiliated to Madras University, Tamilnadu, India – **1983**. Specialisation: Physics with Electronics

Thesis: Estimation of Pollution in the water outlet coming from Textool, Ganapathi, Coimbatore, Tamilnadu, India.

II. University Teaching, Research, and Administration:

Jan 2008 – Till now Coordinator for International Relations(till 2013) and Research Professor (3D) at Electrical Engineering Dept, CINVESTAV-Zacatenco, Mexico City, Mexico.

Jan 2005 – Dec 2007, Coordinator for Materials Science group and Research Professor Department of Physics, ITESM, Monterrey, Mexico.

January 2003 – Dec 2004 Investigator (Estancia posdoctoral & Distinguished Researcher), Programa de Investigación y desarrollo de Ductos, Instituto Mexicano del petróleo, Mexico.

July 2001 – Dec 2002 Investigador (Postdoc), Solar-Hydrogen Fuel cell group, Department of Solar Materials, Centro de Investigación en Energía, UNAM, Temixco, México.

July 1986 – July 2001 Lecturer & Assistant Professor, Department of Physics, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India.

III. Areas of Research Experience and Expertise

- ♣ Synthesis of various metal and semiconductor (nanoparticles & thin films) nanostructured materials like CdTe, CdSe, CIS, CIGSe, CZTS, CdZnS, ZnO, ZnO:Al, CdS, BiVO₄ (doped), BiVO₄-TiO₂, Fe₃O₄-TiO₂, Au-Fe₃O₄ core-shell structures, etc. by various techniques.
- ♣ Various characterization techniques like XRD, SEM, AFM, HRTEM various Spectrophotometers, Electrical (I -V, C-V, photoconduction, QE, dielectric, etc.) etc.
- ♣ Fabrication of solar cells, fuel cells, biosensors – characterization, optimization and its applications.
- ♣ To set up pilot plant to manufacture CIGS- based solar cells with low-cost manufacturing technology incorporating nanostructures
- ♣ Low cost new nanostructured materials and composites for photocatalytic applications

Specific Goals

- ♣ To improve the efficiency of CIGSe based solar cells by bandgap engineering, introducing plasmonic nanostructures and exploring the Na incorporation.
- ♣ To Engineer the complex nanoparticle composites (especially BiVO₄, BiVO₄-TiO₂, Fe₃O₄-TiO₂) and probe into the emergent interfacial energetic alignment, kinetic processes and its role for understanding the mechanisms of photon harvesting and

heavy metal adsorption.

- ♣ Calculations, Design and Simulation of various nanostructured material properties using Materials Studio (DFT, CASTEP) - specifically for the PV and PC material

IV. Capacity to Procure External Funds and Participation in Projects

- 1) **Assessing the scope for lesson-drawing on the multi-level governance of solar PV waste in Mexico and the UK**, Newton Mobility Grants 2017 RD3 scheme, Grant NMG2R2\100105, £6,520.00 (**Joint PI Velumani (Mex) & David Benson(UK)**)
- 2) **Fabricación de celdas fotovoltaicas basadas en películas delgadas CuIn(Ga)Se crecidas por proceso híbrido**; CEMIE-Sol P55, (**Principal Investigator**) Start from Dec 2017 to Dec 2018. Budget 2.5 Million Mexican Pesos (**About \$ 140,000 USD**)
- 3) **Implementation of Thermosolar, Photovoltaic, and Photocatalysis for the removal of heavy metals: Design of an auto sustainable pilot plant**; CONACYT-SENER Project 263043 (**Principal Investigator**) Budget: \$27,017,871 MN Pesos (2016 -2019) (**About \$1.7 Million USD**)
- 4) **Fabrication of CIGS and CZTS solar cells** – participant in a Mega project from CeMIE-Sol- CONACYT-SENER project P26 (**Principal Investigator**), Budget: \$3,595,000 Mexican Pesos - Completed in Dec 2016 (**About \$ 260,000 USD**)
- 5) **Síntesis y Caracterización de Nanopartículas de Fe₃O₄ Core-Shell para Aplicaciones Virales**, CONACYT Project No **0168577 (Principal Investigator)**, Budget: \$ 1.8 Million M N Pesos Completed in Oct 2015 (**About \$ 130,000 USD**)
- 6) **Synthesis and characterization of pure and doped BiVO₄ for photocatalytic applications**, (**Principal Investigator**), Fondo Cinvestav-Univ du Maine (France) a joint project, Completed in Dec 2013, Budget: **10,000 Euros**
- 7) **Laboratorio de Microscopía Electrónica de Alta Resolución para Caracterización de Nanoestructuras**, (**Principal Investigator**) A Project to setup National Laboratory facility for Mexican Research Community – Project No: 122752, Aug 2010 to July 2012, Budget: \$ 55 Million Pesos (\$ 20 Million from CONACyT and \$ 35 Million from CINVESTAV) (**About \$4.6 Million USD**)

- 8) **BisNano- Functionalities to Bismuth based Nanostructures** – Leader of Group Project approved by CONACYT-EU coordinated call, Oct 2010 to Sept 2012, Budget: \$ 11, 700,000 MN Pesos. **(About \$1.1 Million USD)**
- 9) **Nano-engineered 3-Dimensional impregnation of nano-catalysts [Pt, Pd(70)-Co(20)-Au(10) and Pd(70)-Co(20)-Mo(10)] on CNT for PEM Fuel Cells** BY S. Velumani **(Principal Investigator)** & Mario A. Martinez (Co-PI) - ITESM & A. M. Kannan(PI), L. Munukutla, G. Tamizhmani, S. Petrovic & R. Ayyanar – ASU - A joint project with Arizona state university & ITESM – Budget; **\$ 100,000 USD** – Oct 2007 to Sept 2009.
- 10) **Fabrication of high-efficiency solar cells using nanostructured materials**, (Principal Investigator) GOOGLE-TEC innovation cell, Tecnologico de Monterrey- campus Monterrey, Mexico, Budget; **\$ 175,000 USD** (April 2007 – March 2009)
- 11) **Fabrication and Characterization of Organic /Inorganic (PTh/CdSe&CdS) hybrid materials for Solar Cell Applications (Co-Investigator)** Funding Agencies: CONACyT, Mexico and Department of Science and Technology, India, Budget: **\$ 24,000 USD** (only travel grants) Period: 2004-2006
- 12) **Titanium dioxide (TiO₂) Nanotube Solar cells using CdX (S or Se) nanocrystals with P3HT sensitizers, (Participant)** CONACyT-INDIA project, approved for travel grants **\$22,900 USD**, J110.550 (2006 – 2009)
- 13) **Theoretical and Experimental Analysis of Pd-Co-Mo, Pd-Co-Au and Pd-Co-Ni composites for its catalytic activity in PEM fuel cells, (Principal Investigator)** CONACyT, 2007, Budget grant: \$ 100,000 MN pesos, Mexico **(About \$11,000 USD)**
- 14) Proposal for Financial support to visit UT at Austin, US for scientific collaboration - participant, CONACyT- UT Austin; Budget –**10,000 USD** from ITESM-Campus Monterrey.
- 15) **Basic Research on Materials for Photoelectrolysis/Photocatalysis for Hydrogen production.** (Participant) (2003 – 2006); Project No. G 38618-U; **Budget: \$6,549,379 MN pesos**, Funding Agency: CONACyT, Mexico.

Industrial Projects (Principal Investigator)

- 1) Examination of semiconductor circuits using FIB and SEM – 40,000.00 MN Pesos from **ATL**, Mexico city, Complete in Dec 2013.

- 2) Laboratorio De Prototipo De Piezas De Inyeccion Y Transporte De Materila Para La Industria Metal-Mecanica Y De Alimentos. Etapa 1. Desarrollo De Recubrimientos Mediante Deposicion Fisica De Vapor, with “**Grupo de servicio industrial y Maquinaria, S.A.de C.V.**, Aguascaliente, Mexico, Budget: \$240,000 MN Pesos, Complete in Dec 2014
- 3) “Laboratorio De Desarrollo De Componentes Mecanicos Para Aplicaciones Aeroespaciales Mediante Electroerosion. Etapa 1: Codificadores Para Actuadores De Superficies De Control En Aeronaves” with “**Maquinados Express SA de CV**” APOYO POR DESARROLLO DE PROYECTO CON APOYO DE FONDOS DE INNOVACION 2011 FOLIO 155281, MODALIDAD INNOVAPYME. . Budget: \$100,000.00 MN Pesos, 2014
- 4) “Fortalecimiento de capacidades tecnológicas para el prototipado de herramientas de fresado y micro-fresado de materiales avanzados. Etapa 2. Laboratorio de recubrimientos nano-estructurados para aplicaciones médicas, aeroespaciales y de energía” with “**3G Herramientas Especiales SA de CV**” APOYO POR DESARROLLO DE PROYECTO CON APOYO DE FONDOS DE INNOVACION 2011 FOLIO 152586, MODALIDAD PROINNOVA. Budget: \$100,000.00 MN Pesos, 2015
- 5) Recubrimientos nanoestructurados para tubos de inhaladores portátiles CONACYT Project No 198470 with industry **3G BIODesarrollo S.A. DE C.V.**, Budget: \$200,000, Completed in Dec 2016
- 6) Desarrollo de discos para turbinas aeroespaciales- Etapa 1: Proceso hibrido de electroerosión por alambre y corte por chorro de agua abrasivo CONACYT Project No 196552 with industry Empresa: **INNOVATOOL S.A. DE C.V.** Budget: \$200,000 valid till Dec 2016.

Other small institutional Projects Executed in Mexico

1. Fabrication and Characterization of hot wall deposited $\text{CdSe}_x\text{Te}_{1-x}$ for solar cells and hydrogen production – at CIE-UNAM, Temixco, Mexico (July 2001 – Dec 2002)
2. Nitrided NiCr coating for bipolar plates of fuel cells – at Instituto Mexicano del Petroleo, Mexico. (Jan 2003 – Jan 2004)
3. Epoxy coatings embedded with Ni, Cr, NiCr and TiO_2 nanoparticles for prevention of corrosion in X-52 and X-65 steel pipes - at Instituto Mexicano del Petróleo, Mexico. (Jan 2004 - 2005).

V. Courses Designed and Taught for undergraduate and postgraduate students

Courses taught in India and Mexico from 1986 to 2016

UG –Undergraduate/Engineering

PG –Postgraduate – Either Masters or PhD

Frequency 1 =1 semester = 40 hrs

No	Subjects	Semester	Frequency	years
Undergraduate courses				
1	Physics 1 (Serway & Jewett)	I & II	6	2005, 2006, 2007
2	Engineering Physics (Resnick and Halliday)	I & II	10	1992-2001
3	Properties of matter and Heat & Thermodynamics	I year	4	1986,1987,1988 & 1991
4	Physical Electronics	III	1	1987
5	Thin film physics for VI semester students	VI	2	1986, 1987
6	Nanostructured Materials /Nanotechnology	VIII	2	2005, 2006
7	Digital electronics	VI	5	1988 -1992
8	Materials Science	III	5	1990, 1997-99, 2000
9	Microprocessors and its applications	VI	6	1989, 1992-1996
10	Fuel cell – Principle, operations, and applications	VIII	3	2005-2007
11	Photovoltaic cells	VIII	1	2007
12	Renewable and Sustainable Energy	VIII	1	2016-17
Postgraduate courses				
1.	Nanostructured Materials	I & II Yr	7	2009-13,2015-17
2	Introduction to Nanoscience and Nanotechnology-	I & II Yr	4	2010-2013
3	Materiales para la Manufactura - Introduction to Nanotechnology & fuel cells	IV	2	2006, 2007
4	Fuel cell Science and Engineering	I	1	2005
5	Thin film physics	I Yr	4	1997-2000
Undergraduate/Graduate Laboratory Classes				
1	Engineering Physics laboratory	I & II UG	16	1986-2001
2	Basic Electronics and digital electronics laboratory	III & IV UG	2	1987-1989
3	Digital electronics and microprocessor laboratory for V and VI semester students	V & VI UG	6	1989-1994
4	Thin film laboratory	PG	2	1999,2000

VI. Project Thesis

Doctoral Thesis Students

Complete details like title, year of completion can be found in the below link

<https://drive.google.com/open?id=1dClqfTqG3KgmLCi8NxObUsv7jGk0cdei>

Below table gives the students working in the three areas of my research interest:

UP – Under Progress

Solar Energy Materials	Photocatalytic materials	Biomaterials
CIS, CIGS, CZTS, CdS etc. Micro/nano structures	Pure BiVO ₄ and doped BiVO ₄ -TiO ₂ composite Nanostructures	Fe ₃ O ₄ core-shell & Fe _x O _y - Metal nanostructures
1. Mauricio Garza 2. Rodrigo Cue Sampedro 3. Vidhya Bhojan 4. Jagadeesh Babu Bellam 5. Rohini N Mohan 6. Pablo Reyes Figueroa 7. R Aruna Devi 8. M.Latha Priya 9. Ganesh Regime (UP) 10. Nwakanma Onyekachi Michael (UP) 11. Luis Dorian Valencia (UP) co- assessor (UNICACH) 12. Ashok Adikhari (UP)	1.Venkatesan Rajalingam 2. Victor Isreal 3. Karthick Sekar (UP) 4. Mercy Rani (UP) 5. Drisya Damodaran(UP)	1.M.Ravichandran 2. Christeena Theresa(UP)

Postgraduate (Masters) Thesis students

Solar Energy/electronic Materials	Fuel cells/ Controller/Simulations	Bio materials - Fe ₃ O ₄ core-shell & Fe _x O _y -Metal nanostructures
1. Ing Alan Moran 2. Ing. Pablo Itzam Reyes	1. Ing. Fernando Martell	1. Fís. Luis Abraham

Figueroa 3. Ing. Jorge Duval Lara 4. S.Venkatachalam 5. T.Kaleeswaran 6. S.Thanikaikarasan 7. M.Dhanasekaran 8. M.Shanthakumari 9. R.Sangeetha 10. P.Thillai Jothi 11. K.Shanmuga Priya 12. R. Rajesh Biswal	2. Marcos Cuellar Hernández 3. M.Shanthakumari	García Hernández 2. Maheswar Adiraj Iyer
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Undergraduate Thesis Students

Electronic Materials	Fuel cells/Controller/Simulations	Electronics/Microprocessor/Software
1. N.Babu	1. Ernesto Efren Velazquez Romo 2. Eduardo Loza Aguirre 3. Andrés Vargas Lugo Cantú 4. Carlos E. Ortiz Díaz 5. Gerson Vazquez	1. P.Amsaveni, etc 2. G.Jawahar etc 3. R.Gayathri etc 4. V.Jaisudha etc 5. Anand Krishnamurthy etc. 6.V.Mathu etc

Postdoctoral students

1. Dr. Jorge Sergio Narro Rios, Nov 2017 till date – Setting up spray pyrolysis system to perform deposition of CIS & CIGS in inert atmosphere and fabrication of low cost solar cells.
2. Dr. José Jorge Ríos Ramírez, July 2017 till date – Working on simulation of $\text{BiVO}_4\text{-TiO}_2$ and $\text{Fe}_3\text{O}_4\text{-TiO}_2$ nano heterostructures
2. Dr. Myriam Solis Lopez, March 2017 till date - Working on synthesis and characterization of various composite (especially $\text{BiVO}_4\text{-TiO}_2$ & $\text{Fe}_3\text{O}_4\text{-TiO}_2$) nanostructured materials for photocatalysis and heavy metal removal.
3. Dr. Roberto Hernandez Maya, Sept 2016 till date – Working on synthesis and characterization of various composite (especially $\text{BiVO}_4\text{-TiO}_2$ & $\text{Fe}_3\text{O}_4\text{-TiO}_2$) nanostructured materials for adsorption.
4. Jose Javier Muñoz, June 2018 – Aug 2018 Worked on Market evaluation/analysis of CIGS, CZTS based solar cells.

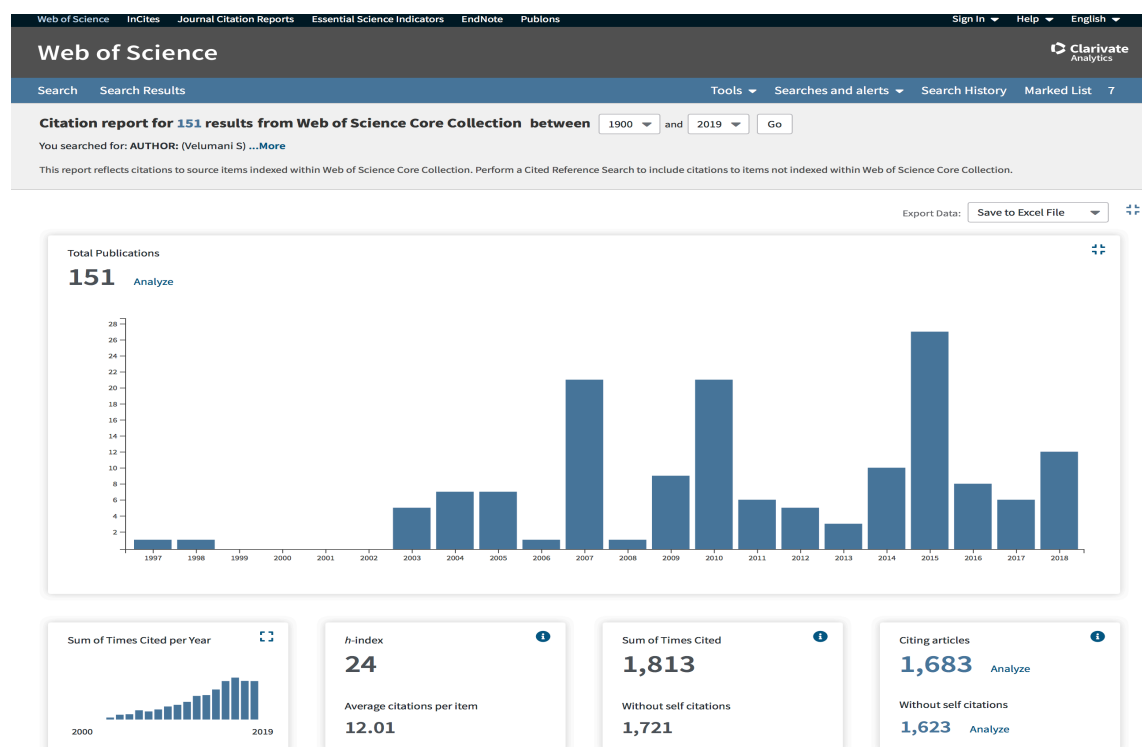
5. Dr. Martha Jiménez-Castañeda Myriam Solis Lopez, March 2017 to Sept 2017 - Worked on synthesis and characterization of various nanostructured materials for photocatalysis and heavy metal removal.
6. Dr. Goldie Oza – Served as a postdoc from March 2013 to June 2016 - worked on various metal and core-shell nanostructured materials for photocatalysis and biomedical applications
7. Ignacio Becceril – served as a postdoc from Jan 2013 to Dec 2014 and worked on chemical synthesis of various metal and semiconductor nanostructures for PV and photocatalytic applications.

VII. Publications in peer-reviewed International Journals

Out of 141 published papers listed below are selected 10 papers published recently in the related field. The complete list of publications can be found in following link

<https://drive.google.com/file/d/1HLoJxyJPrEzYmOzHgRitOGWq4t2-66Z7/view?usp=sharing>

Below is the extract from the Web of Science showing the papers published year wise and total citations. Below table shows 151 articles which include some conference publications



Some important papers published in Peer reviewed International Journals in the three areas of my research interest

Solar Energy/Electronic Materials

1. M. Latha, R. Aruna Devi, S. **Velumani**, Hot Injection Synthesis of Cu(In, Ga)Se₂ Nanocrystals with tunable bandgap, Optical Materials, Volume 79, May (2018) Pages 450-456. <https://doi.org/10.1016/j.optmat.2018.04.016>
2. B J Babu, B. Egaas, **S.Velumani**, Selenization of CIS and CIGS layers deposited by chemical spray pyrolysis, Journal of Materials Science: Materials in Electronics, Vol 29 Issue18 (2018) 15369-15375. DOI: 10.1007/s10854-018-8916-4
3. F.A. Pulgarín-Agudelo, O. Vigil-Galán, M.M. Nicolás-Marín, Maykel Courel, R. González, Héctor Mendoza-Leon, **S. Velumani**, M. Rohini, J. A. Andrade-Arvizu, F. Oliva, Víctor Izquierdo-Roca, Preparation and characterization of Cu₂ZnSnSe₄ and Cu₂ZnSn(S,Se)₄ powders by ball milling process for solar cells application, Materials Research Express, 2017, <https://doi.org/10.1088/2053-1591/aa9a8d>

Photocatalytic materials

4. R. Venkatesan, **S. Velumani**, K. Ordon, M. Makowska-Janusik, G. Corbel, A. Kassiba, Nanostructured bismuth vanadate (BiVO₄) thin films for efficient visible light photocatalysis, Materials Chemistry and Physics 205 (2018) 325 – 333, <https://doi.org/10.1016/j.matchemphys.2017.11.004>
5. Merupo, VI, **Velumani, S**, Abramova, A, Ordon, K, Makowska-Janusik, M, Kassiba, A, Cu, Mo-doped and pristine-BiVO₄ thin films prepared by RF sputtering process for photocatalytic applications, Journal of Materials Science-Materials In Electronics, Volume: 29 Issue: 18 (2018) 15770-15775, DOI: 10.1007/s10854-018-9241-7
6. Victor-Ishrayelu Merupo, **Velumani** Subramaniam, NicolasErrien, JacekSzade and Abdel-Hadi Kassiba, Structural, electronic and optical features of molybdenum doped BiVO₄, Materials Science in Semiconductor Processing, 31 (2015) 618–623.

Biomaterials

7. Angeles-Pascual A, ; Pinon-Hernandez JR, Estevez-Gonzalez M, Pal U, **Velumani S**, Perez R, Esparza R, Structure, magnetic and cytotoxic behaviour of solvothermally

grown Fe₃O₄@Au core-shell nanoparticles, Materials Characterization, Volume: 142 (2018) 237-244 DOI: 10.1016/j.matchar.2018.05.041

8. M. Ravichandran, Goldie Oza, **S. Velumani**, Jose Tapia Ramirez, Francisco Garcia-Sierra, Norma Barragan Andrade, A. Vera, L. Leija and Marco A. Garza-Navarro, Plasmonic/Magnetic Multifunctional nanoplatfrom for Cancer Theranostics, **Nature Scientific Reports** Oct 6:34874 (2016) DOI: 10.1038/srep34874
9. Goldie Oza, M. Ravichandran, Victor-Ishrayelu Merupo, Sachin Shinde, Ashmi Mewada, Jose Tapia Ramirez, **S. Velumani**, Madhuri Sharon, Maheshwar Sharon, Camphor-Mediated Synthesis of Carbon Nanoparticles, Graphitic Shell encapsulated carbon nanocubes and carbon dots for Bioimaging, **Nature Scientific Reports** Vol 6, No of article 21286, Feb 2016

VIII. Contributions in the book (Chapters)

1. **Non-Silicon materials for photovoltaic applications** (under preparation) to be published by Springer Publications
2. Goldie Oza, M. Ravichandran, Pravin Jagadale, **S. Velumani**, Inorganic Nanoflotillas as engineered particles for drug and gene delivery, Engineering of Nanobiomaterials - Applications of Nanobiomaterials Vol. 2, Elsevier Publications, 2016, Edited by Grumezescu, Alexandru Mihai
3. V.Renugopalakrishnan, A.M.Kannan, S.Srinivasan, V.Thavasi, S.Ramakrishna, P.Li, A.Mershin, A.Filipek, A.Kumar, J.Dutta, A.Jaya, L.Munukutla, **S.Velumani**, and G.F.Audette “Nanomaterials for Energy storage applications” Chapter XX, American Scientific Publishers, Edited by Hari Singh Nalwa, 2008.
4. K.Gurunathan and **S.Velumani**, “Energy-Efficient, cost-Effective and environmentally – sustainable systems and processes” Edited by R.Rivero, R.Pulido and G.Tsatsaronis Vol 3 (2004)1447-1457, ISBN:968-489-027-3.

IX. Editor, Guest Editor and Editorial publication in INTERNATIONAL / NATIONAL Journals

1. **Editor** Journal of Materials Science: Materials in Electronics, Springer Publications
2. **Guest editor**, **S.Velumani**, Special issue for the Symposium on “Advances in Functional

Semiconducting Materials”: XXVI International Materials Research Congress, Cancun, Mexico, IMRC2017 held in Mexico, Journal of Materials Science: Materials in Electronics, Springer, to be published in March 2018.

3. **Guest editor & Editorial publication, S.Velumani**, Special issue for the Symposium on “Advances in Functional Semiconducting Materials”: XXII International Materials Research Congress, Cancun, Mexico, IMRC2013 held in Mexico; Materials Science in Semiconductor Processing, **Elsevier publication**, 37(2015).
4. **Guest editor & Editorial publication, S.Velumani** and N.Muthukumarasamy, Special issue in “Advanced Materials Research”, A **TransTech** Publications Switzerland, Vol 678 (2013)1.
5. **Guest editor & Editorial publication, S.Velumani**, Special issue for the Symposium on advances in semiconducting materials: XX International Materials Research Congress, Cancun, Mexico, Materials Science and Engineering B-Advanced Functional Solid-State Materials, **Elsevier publication**, Volume: 177 Issue: 16 (2012).
6. **Guest editor & Editorial publication: S.Velumani**, Special issue Special issue for the Symposium on “Advances in Semiconducting Materials”: XIX International Materials Research Congress, Cancun, Mexico, IMRC 2010; from the journal “Materials Science Engineering B”, **Elsevier publication**, Volume 176, Issues 17 (2011) 1314.
7. **Guest editor & Editorial publication: Ignatiev A and Subramaniam Velumani**, Special issue Special issue for the Symposium on “Advances in Semiconducting Materials”: XVI International Materials Research Congress, Cancun, Mexico Symposium on Advances in Semiconducting materials, Vaccum, **Elsevier publication**, 84 (2010) 1181.
8. **Guest editor & Editorial publication: S. Velumani**, XVIII International Materials Research Congress: Symposium on Advances in Semiconducting Materials—Cancun, August 2009 Materials Science and Engineering: B, **Elsevier publication**, Volume 174, issues 1–3, 25 (2010)1.
9. **Guest editor & Editorial publication: S.Velumani**, R.Asozo, Umapada Pal, Special issue for the 3rd Mexican Workshop on nanostructured Materials held in Cinvestav, Mexico; Journal of Nano Research, A **Trans Tech** Publications ISSN 1662-5250, Vol 9

(2010).

10. **Guest editor & Editorial publication: S.Velumani**, R.Asomoza, “Advances in semiconducting Materials”, Advanced Materials Research, **TransTech** Publications, vol 68 (2009).
11. **Guest editor: S.Velumani** and T.Kannadasan, Special issue from the journal “NanoTrends, A journal of Nanotechnology and its Applications” for an International conference - Nanotech-2006 held at Coimbatore Institute of Technology, Coimbatore India from 25th to 28th June 2006 Nanotrends: A Journal of Nanotechnology and its Applications, Vol 4, Iss 1, (2008) 1.
12. **Guest editor & Editorial publication: S. Velumani**, Ramiro Perez Campos, Antonio Contreras, XIV International Materials Research Congress: Symposium 7, Materials Characterization — Cancun, August 2005; Materials characterization, **Elsevier Publications**, volume 58, issues 8–9, (2007)671.

X. Participation in International / National Conferences

From 1990 to 2018, there are about 290 Conference presentations and the details like Authors, title, Conference place, date of Conference can be found in the below Google drive link

<https://drive.google.com/file/d/1HLoJxyJPrEzYmOzHgRitOGWq4t2-66Z7/view?usp=sharing>

Some prominent Conferences attended in various countries

1. International Materials Research Congress organized in Mexico every summer
2. IEEE, International Conference on Electrical Engineering, Computing Science and Automatic Control (CCE), Mexico
3. Nano Today Conference, Organized by Elsevier, Dubai.
4. International Conference on Microelectronics and Plasma technology, ICMAP, Gunsan, Korea
5. Global Photovoltaic Conference, International Symposium on Photovoltaics, Busan, Korea.
6. Various Conference in India

XI. Distinctions:

a. Academic

1. Sistema Nacional de Investigadores (**SNI**), México – **Nivel III**. A National scholarship given to researchers in Mexico directly by the Department of Science and Technology

(CONACYT - an equivalent of NSF in the USA).

2. **Editor** Journal of Materials Science: Materials in Electronics, Springer Publications
3. **Editorial Board member**, Materials Science in Semiconductor Processing, Elsevier Journal
4. **Editorial board member**, NanoTrends, A journal of Nanotechnology and its Applications, An International Online BiMonthly Publication, ISSN 0971-418X
5. **Editorial board member**, International Journal of Photoenergy, Hindawi Publications
6. **Scientific Reviewer** – International journals (only few are listed below):
 - a) Applied Physics A: Materials Science & Processing
 - b) Solar Energy Materials and Solar cells
 - c) Journal of Materials Science
 - d) Surface Science
 - e) Materials Chemistry and Physics
 - f) Journal of NanoResearch
 - g) Advanced Materials research
 - h) Ceramic International etc.
7. **Guest Editor** of about 11 special issue from various publishers as mentioned in the IX. Guest editor and Editorial column
8. Awarded **young scientist** fellowship by TamilNadu State Council for Science and Technology, Chennai, India (1995).
9. Best poster presentation award in National Science Congress, Anna University, Chennai, India (1999).
10. Listed as leading personalities in research “**Who's Who in Science and Engineering, 2005-2006 (8th Edition)**”, published by Marquis Who's Who, Chanlon Road, New Providence, NJ 07974, USA

b. Administrative:

1. **Founder and Coordinator for International Relations Office (CORI)**: took care of all the international activities of Cinvestav, like signing MoU's, receiving and meetings with foreign visitors etc of various units of CINVESTAV (Cinvestav has 9 units spread throughout Mexico); designed and maintaining the webpage <http://cori.cinvestav.mx> (from 2008 to 2013)
2. During the period 2008 to 2013, six years of my responsibility as coordinator for International relations visited more than 25 countries and signed about 80 Memorandum of Understandings between CINVESTAV and other leading research

institutions around the world

3. Organized joint workshops at Univ du Maine, France and Cranfield University, UK with about 15 professors from Cinvestav and respective Universities yielding in the creation of joint funds and improving collaborations.
4. Promoted creation of Joint funds for interinstitutional projects between Univ du Maine and Cranfield.
5. Participated in various Educational Fairs (Exhibitions) like NAFSA, Becas Chile, International & National exhibitions representing Cinvestav
6. **Founder and Academic Coordinator** for the program “Doctorate in Science with specialization in Nanosciences and Nanotechnology” – Aug 2009 to Nov 2010; designed and maintaining the webpage: <http://cori.cinvestav.mx/nano/>
7. Prepared and submitted the plan of work and operations of the Doctoral program on Nanoscience and nanotechnology, to the Mexican Education Department for National recognition of the program (PNPC)
8. Consultative board member in the Energy and Nanoscience and Nanotechnology oriented committee’s in the Mexican education council (CONACYT)
9. **Founder and Chairman**, Cinvestav Criquet Club (CCC), 2010
10. **Founder and Chairman** for the “Research Chair on Nanoelectronics” in ITESM, Monterrey 2006
11. **Founder** of M.Phil Course in Coimbatore Institute of Technology, 2000

XII. Plenary/Invited Lecture

- 1) **Plenary Speaker, S.Velumani**, Fabrication of low cost CIGS based photovoltaic cells, Simposio on Desarrollo de Materials Nanoestructurados y sus Aplicaciones Tecnologicos, Universidad Tecnologico de Panama, Panama 10-11, March 2017.
- 2) **Invited Speaker**, Hybrid deposition techniques for the fabrication of CIGS based solar cells, Universidad de ciencias y artes de Chiapas, Tuxtla Guittierez, Chiapas, 6 Nov 2017.
- 3) **Invited Speaker, Physics Department Special Seminar**, Hybrid deposition techniques for the Fabrication of CIGS layers for low cost PV devices, University of Houston, Texas, USA, 23rd Oct 2017.

- 4) **Invited Speaker** - Transition to Renewable Energy – Perspective of CIGS- Central Department of Physics, Tribhuvan University, Kirtipur, Nepal, 5th Aug 2016.
- 5) **Plenary Speaker** –Transition to Renewable Energy – Perspective of CIGS- Energy, Materials & Innovation Week - BRICS 2016, Johannesburg, South Africa 2 to 4 March 2016.
- 6) **Invited speaker** - P. Reyes, T.Painchaud, A.Ludovic, N.Barrue, **S. Velumani**, Growth of CuInSe₂ Thin Films by a Chemical Spray Pyrolysis/co-evaporation Hybrid Method, Symposium C: Solar PV (Photovoltaics) Materials, Manufacturing and Reliability, International conference on Materials for Advanced Technologies of the MRS Singapore (ICMAT2015 & IUMRS2015) 28th June to 3rd July 2015, Singapore
- 7) **Plenary Speaker**, Simposio on Desarrollo de Materials Nanoestructurados y sus Aplicaciones Tecnologicos, Universidad Tecnologico de Panama, Panama 2-4, March 2015.
- 8) **Invited speaker** - **S. Velumani**, P. Reyes, B.J.Babu, B.Vidhya, N.Barrue, R.Asomoza and Junsin Yi, Hybrid deposition Technique for Fabrication of CIGS Based PV Devices, Global Photovoltaic Conference, International Symposium on Photovoltaics (ISP 2014) November 10-11, BEXCO, Busan, Korea
- 9) **Invited speaker**, **S. Velumani**, P. Reyes, B.J.Babu, B.Vidhya, N.Barrue, R.Asomoza and Junsin Yi, Development of Low-Cost Processing Techniques for Fabrication of CIGS Based PV Devices, International Conference on Microelectronics and Plasma technology, ICMAP 2014, July 8-11, Gunsan, Korea
- 10) **Invited speaker**, **S. Velumani**, B.J.Babu, P.Reyes, M.Rohini, M.Latha, Alvaro Angeles, Josue Romero and R.Asomoza , Development of low-cost non-vacuum processing techniques for the fabrication of CIGS nanostructure based PV devices, International Conference on Nanoscience and nanotechnology (ICONN 2013), March 18-20, 2013 Organized by SRM University, India
- 11) **Invited speaker**, “Role of nanomaterials in energy conversion devices – Solar and Fuel cells, at Innovation, Science and Technology week at IPN, Oct 3rd, 2013
- 12) **Plenary speaker**, Development of low cost non-vacuum processing techniques for

the fabrication of CIGS nanostructure based PV devices, International conference of Optics (ICO 2013), 21 to 23 March 2013, Algeria.

- 13) **Invited speaker**, Deposition and Characterization of TCO's (AZO and ITO), i-ZnO and graded CIGS thin film structure for superstrate solar cell using chemical spray pyrolysis, *Section 7-7 Nanotech for fuel cell and solar cell, BIT's 2nd Annual World Congress of Nano-S & T 2012, Qingdao, China*
- 14) **Invited speaker**: Title Development of low cost non-vacuum processing techniques for fabrication of nano structure based CIGS PV devices. First Euro-Mediterranean Conference on Materials and Renewable Energies, Nov 21 to 25, 2011, Marrakech, Morocco.
- 15) **Invited speaker**, Development of low-cost non-vacuum processing techniques for the fabrication of CIGS nanostructure based PV devices, Pre-conference workshop of International conference on nanoscience and nanotechnology, (ICNN2011), Jointly organized by Cinvestav and CIT, India, July 6-8, 2011
- 16) **Plenary Speaker**: "Role of Nanostructured Materials in Energy storage devices: Solar and Fuel cells, Saltillo, Coahuila. Megatentencias organized by State of Coahuila 6th Oct 2010
- 17) **Plenary speaker**: I Simposio: Materiales Ceramicos y sus Potenciales Aplicaciones; 23 to 27 Aug 2010, "Ceramic Nanostructures and its applications in Fuel cells(SOFC)", Panama
- 18) **Invited speaker** -Centro de Investigacion y Estudios de Posgrado, Universidad Autonoma de San Luis Potosi, Seminario invitado, "Uso y Caracterizacion de nano Materiales", 22 de Oct 2009.
- 19) **Plenary Speaker** : 4th International Conference on Nanotechnology - Occupational and Environmental Health (NanOEh2009), 26-29 August 2009, Paasitorni, Helsinki, Finland; www.ttl.fi/nanoeh2009
- 20) **Invited speaker** - Conferencia Latinoamericana 2008 - "*Sociedad de la Informacion y el Conocimiento*" Ponente invitado "nanotecnología", 29 de Octubre 2008
- 21) **Invited speaker** - **NanoTX'07** nanotechnology conference and trade show, at the

Dallas Convention Center on October 2007, Dallas, TX (www.nanotx.biz)

- 22) **Invited speaker** - **NanoTX'06** nanotechnology conference and trade show, at the Dallas Convention Center on September 27-28, 2006, Dallas, TX (www.nanotx.biz)
- 23) **Invited speaker** – *Pre-conference workshop on Nanostructured materials: Synthesis, Characterization and Applications*, Nanotech 2006, Coimbatore Institute of Technology, Coimbatore, India, June 23 & 24, 2006.
- 24) **Invited speaker** – *Pre-conference workshop on Fuel cells and Nanostructured materials*, Nanotech 2006, Coimbatore Institute of Technology, Coimbatore, India, June 23 & 24, 2006.
- 25) **Invited speaker** - Cinvestav-Queretaro, Seminario Departamental, Fuel cells and nanostructured materials”, 29 Nov 2005
- 26) **Invited speaker Invitado** - Cinvestav-Queretaro, Seminario Departamental, Present Trend in nanostructured materials”, 28 Nov 2005
- 27) **Invited speaker**, Comparison of Aluminum and Stainless Steel Bipolar Plates for PEM Fuel Cells Using a Forced Flow-Through Design, IMRC2005, Aug 2005.
- 28) **Invited speaker** Fuel cells and its applications, Seminar in Department of Chemistry, ITESM- Campus Monterrey, Aug 2005
- 29) **Plenary speaker** Congreso Nacional de Química Industrial 2005, Invited plenary lecture – “Influence of nanostructures in the solar cells” – UANL – Chemistry on 27 April 2005.
- 30) **Invited speaker** Fuel cells and its applications – invited presentation in the UANL, Department of Fisica-Mathematica (21st April, 2005)
- 31) **Invited speaker** Fuel cells and Nanostructures – invited presentation in the UANL, Facultad Ciencias Quimicas (Marzo 03 de 2005)
- 32) **Invited speaker** X-ray Diffraction - principles, operations and applications in nanostructures” – Instituto Mexicano del Petróleo, Mexico. 12 April 2004
- 33) **Invited speaker**, Influence of nanostructures in solar cells – Symposium on Nanostructured Materials and nanotechnology, XII International Materials Research Congress, Cancun, Mexico, 19th Aug.2003

- 34) **Invited speaker**, Nitrided NiCr coated bipolar plates for PEM fuel cells – Symposium on Solar- Hydrogen – Fuel cells, XII International Materials Research Congress, Cancun, Mexico, 19th Aug.2003.
- 35) **Invited speaker** Fuel cell development and commercialization – Government college of Technology, Coimbatore, India. 6th May 2003
- 36) **Invited speaker** Cadmium telluride solar cells on flexible metallic substrates at Department of Physics, Jamia Millia Islamia University, New Delhi in May 2002.
- 37) **Invited speaker** Application of thin film in the development of modern computers - November 2000, At Erode Arts College, Erode, Tamilnadu, India.

XIII. Seminar & Conferences Organized

National and International seminars & conference (as chairman or organizer)

1. **2007 to 2017 (11 years) Chairman**, Symposium on, “Advances in Functional Semiconducting Materials” International Materials Research Congress, IMRC 2007 to IMRC 2016, Cancún, México.
2. **Session Chairman** Symposium C: Solar PV (Photovoltaics) Materials, Manufacturing and Reliability, International conference on Materials for Advanced Technologies of the MRS Singapore (ICMAT2015 & IUMRS2015) 28th June to 3rd July 2015, Singapore
3. **Session Chairman** Global Photovoltaic Conference, International Symposium on Photovoltaics (ISP 2014) November 10-11, BEXCO, Busan, Korea
4. **Session Chairman** International Conference on Microelectronics and Plasma technology, ICMAP 2014, July 8-11, Gunsan, Korea
5. **Co-Chairman y Comite Organizador**, 4th Mexican Workshop on nanostructured Materials, Puebla, Mexico, 19-22 March 2013.
6. **Co-Chairman**, Section 7-7 Nanotech for fuel cell and solar cell, BIT's 2nd Annual World Congress of Nano-S & T 2012, Qingdao, China
7. **International committee Chairman** – Workshop on Nanostructured Materials, July 9 to 11, 2011, at Coimbatore Institute of technology, Coimbatore, India.
8. **Chairman** – Workshop on Nanostructured Materials, June 11 to 13, 2008, at Cinvestav,

Mexico.

9. **Co-Chair**, Symposium 6 “Materials Characterization”, IMRC-2007, at Cancun, Mexico
10. Academic coordinator for a course (CADI) on “Nanostructured materials and fuel cells” from 5th to 8th June 2007, at ITESM- Campus Monterrey
11. **Co-Chair**, Symposium 6 “Materials Characterization”, IMRC-2006, at Cancun, Mexico.
12. **Joint Organizing Secretary** (International), Nanotec 2006, Coimbatore Institute of Technology, Coimbatore, India, June 23 & 24, 2006.
13. **Co-Chair**, Symposium 7 “Materials Characterization”, IMRC-2005, at Cancun, Mexico.
14. **Organiser** - one day seminar on “Impact of nanotechnology on Industries and in economy” Dr. Georg Wagner, Founder, NTC (Nano Tec Coatings) GMBH®, ITESM- Campus Monterrey, 3PPrd June 2005
15. **Chairman** for a session in Symposium 2 of International Materials Research Conference at Cancun, Mexico, 2004.
16. International **Organizing Committee** member for the symposium II organized by XII International Materials Research Conference at Cancun, Mexico, 2004.
17. International Scientific **Advisory Committee** member, International Conference on the Physics, Chemistry, and Engineering of Solar Cells (SCCELL-2004), May 13-15th 2004, Badajoz (Spain)
18. Organizing **committee member**, International workshop on the present status of Hydrogen held on 20 and 21 August 2003 at IMP, Mexico.
19. International Organizing Committee member for the symposium II organized by XII International Materials Research Conference at Cancun, Mexico, 2003.
20. Organizing **committee member**, First International workshop on nano-structure materials for new energy systems, conversions and applications, two day seminar organized on Feb 27-28, 2003, at IMP, Mexico
21. International **Organizing Committee** member, International Symposium on Solar Hydrogen Fuel cells –6, organized by XII International Materials Research Conference at Cancun, Mexico, 2002.
22. **Organizing Secretary**, organized one-day seminar on “Measurement techniques for thin

film Characterization” in the Department of Physics -3rd March 2000- a program sponsored by CSIR (Council for Scientific and Industrial research, Government of India) New Delhi. Forty two participants (University Lectures and Research Scholars) from South India attended the seminar.

XIV. Short-term visits and sabbatical work

- Visiting Professor (so far 6 months) –during March 2010, April 2011, April 2012, Sept 2013, Nov 2015 and Nov 2017, Department of Physics, Universidad du Maine, Le Mans, France
- Visiting Professor, Feb 2014 to Jan 2015, School of Information and Communication, Department of Electronic and Electrical Engineering, Sungkyunkwan University, South Korea,
- **visiting Scientist** for 3 months, Department of Semiconducting Materials, University of Twente, Enschede, The Netherland – Funded by NanoForumEula
- Worked in the department of Physics, University of Rajasthan, Jaipur, India in May – June 1988 in microprocessors and computer interfacing of Physics experiments.
- Carried out research work at Materials Science Division, CECRI, Karaikudi, India, under Young scientist scheme from 1st March to 31st July 1995.

XV. Membership

- ✓ Consultative board member in the Energy and Nanoscience and Nanotechnology oriented committee’s in the Mexican education council (CONACYT)
 - ✓ Member – Project evaluation committees, CONACYT, Mexico
 - ✓ Executive committee member – CEMIE-Sol Project – a Mexican Govt initiative with 420 Million MN Pesos
 - ✓ MRS – Life member
 - ✓ **Ph.D thesis evaluation (External Examiner) for**
- | | |
|---|--|
| 1. UNISA – South Africa | 5. SRM University India |
| 2. Bharathidasan University, India | 6. MGR Medical University, India |
| 3. Bharathiar University, India | 7. CINVESTAV, Mexico |
| 4. Multimedia University, Malaysia | 8. Instituto Politecnico Nacional, Mexico |

- ✓ **Member** - Board of studies for applied sciences, Autonomous College, Coimbatore Institute of technology, affiliated to Bharathiar University, Coimbatore, Tamilnadu, India
- ✓ **Member** - Board of studies for Engineering courses, Autonomous College, Coimbatore Institute of technology, affiliated to Bharathiar University, Coimbatore, Tamilnadu, India.

Board of Examiner

- ✓ Member, **Board of examiners**, Engineering Physics, Bharathiar University, Coimbatore
- ✓ Member, Board of Examiners, postgraduate examinations, Bharathiar University, Coimbatore, Tamilnadu, India.
- ✓ **Examiner**, Ph.D. thesis evaluation and Project evaluation in Bharathiar University, Alagappa University, Karaikudi and P.S.G. College of Technology, Coimbatore, Tamilnadu, India
- ✓ **Tutorial committee Member and Examiner**, Postgraduate and Pre-Doctoral committee, Centro de Investigación en Energía, Universidad Nacional Autónoma de México, Morelos, México.
- ✓ **Examiner** – Doctoral thesis and postgraduate thesis, CINVESTAV, Mexico
- ✓ **Member and evaluator** – Revised educational program for IFI (Industrial Engineering Physics) ITESM- Mexico
- ✓ **Examiner of Masters and Doctoral thesis** – Multimedia University, Jalan Multimedia, Malaysia.

XVI. Infrastructure Development

- ⇒ Set up “**Laboratorio Avanzado de Nanoscopia Electronica**” in Cinvestav – funded by CONACYT and Cinvestav 2010.
- ⇒ Started new program “Doctorado en Ciencias: Especialización en Nanociencias y Nanotecnología” Aug 2009
- ⇒ First coordinator for International Relations at Cinvestav, established from Jan 2008 – <http://cori.cinvestav.mx/>
- ⇒ Setting up Nanostructured Laboratory for the graduate and research students at Department of Electrical Engineering, Cinvestav, Mexico - Jan 2008
- ⇒ Set up Fuel cells and Nanostructured Laboratory for the graduate and research students at Department of Physics, ITESM-Campus Monterrey, Mexico – Jan 2005 to Dec 2007

- ⇒ Fabricated electro deposition setup for deposition of II-VI chalcogenides and Polymer films at CIE-UNAM, Mexico - 2002
- ⇒ Fabricated closed space sublimation setup for deposition of CdTe films for solar cells applications at CIE-UNAM, Mexico – 2001 -02
- ⇒ Setup Materials Science laboratory in the Department of Physics, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India, funded by AICTE (All India council for technical education), New Delhi, India, under MODROB (Modernization and Removal of Obsolescence) Scheme -1999.
- ⇒ Started Digital electronics laboratory for applied science and computer science & technology students, in the Department of Physics, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India - 1989
- ⇒ Setup Digital circuitry and microprocessor lab for undergraduate computer science and technology students in the Department of Physics, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India– 1990.

XVII. Summer and winter courses attended

1. Nanostructured Materials and Fuel cells, CADI, Tecnologico de Monterrey, Mexico from 5th to 8th June 2007.
2. Workshop on Synthesis, Characterization and applications of Nanostructured materials, CADI, TEC de Monterrey, 13 to 15 July 2005.
3. "Current developments in spinal ferrites and garnets for microwave devices and electronic components" conducted by Indian Institute of Technology, Madras, India from 1st to 13th June, 1987.
4. "Use of Microcomputers in Physics laboratory " conducted by University Sciences Instrumentation Centre, University of Rajasthan, Jaipur, India from 1st to 21st Jan. 1988.
5. "Microprocessor applications", conducted by N.S.S. College of Engineering, Palghat, India from 16th to 28th May 1988.
6. "Engineering considerations for optical and opto mechanical instruments design" conducted by Indian Institute of Technology, Madras, India from 21st May to 1st June 1990
7. "Current developments in microwave materials for electronics and microwave application" conducted by Indian Institute of Technology, Madras, India from 17th to 29th June 1991.
8. "Advanced processing of semiconductors" conducted by Indian Institute of Technology, New Delhi, India from 20th June to 1st July 1994.
9. "Physics and Technology for energy conversion and refrigeration using thermo-electric's" - conducted by Indian Institute of Technology, Kharagpur, India from 24th

Feb. to 1st March 1997.

XVIII. Human Resource Development

- ♣ Visited the University of Texas at Austin, and University of Houston, Houston under the exchange program to set up a research chair on nanotechnology at ITESM- campus Monterrey
- ♣ Visited the University of Houston at Texas, under the exchange program to set up a research chair on nanotechnology at ITESM- campus Monterrey
- ♣ Set-up fuel cell and nanostructures laboratory in ITESM –campus Monterrey.
- ♣ Actively participated in the formation of new Coordination on Hydrogen at IMP, Mexico, 2003.
- ♣ Visited the Blackett Laboratory, Dr.Keith W.Barnham, Prof. of Physics, **Imperial College** of Science, Technology and Medicine, **London** to discuss the possible collaboration work with Solar Hydrogen Fuel cell group, CIE-UNAM, Mexico on 28th May 2002.
- ♣ Course assistant, **AutoCAD** center (An authorized training center of Microsoft, USA), Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India 1987 – 90.
- ♣ Offered laboratory modules for undergraduate students in autoCAD release 9 to 11.

XIX. Proficiency in Language:

Tamil: 100% written and 100 % spoken (Native)

English - 100% written and 100 % spoken

Spanish: 50% written and 80 % spoken