

Name : **Dr. VELUMANI SUBRAMANIAM**

Citizenship Mexican

Sex: Male

Date of Birth 27th March 1963

Marital Status Married



Address for Correspondence:

Department of Electrical Engineering (SEES),

Ave. I.P.N # 2508, CINVESTAV- Zacatenco

D.F. México C.P. 07360

Mail: vels64@yahoo.com or velu@cinvestav.mx

Phone: (off) +52 - 55 - 57473978

I. Professional Employment:

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

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

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

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

Jan 2008 – Nov 2013 Coordinator for International Relations and Research Professor at Electrical Engineering Dept, CINVESTAV-Zacatenco, Mexico city, Mexico.

Nov 2013 – Till now Research Professor at Electrical Engineering Dept, CINVESTAV-Zacatenco, Mexico city, Mexico

II. Educational Qualification:

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

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

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

Specialisation : Electronics

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

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.

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

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

III. Area of expertise:

- ♣ *Synthesis, preparation and characterization of various metal and semiconductor (nano thin films) nanostructured materials like CIGS, CdZnS, ZnO, ZnO:Al, CdS, by various techniques (normal thermal evaporation, pulse electro-deposition, sputtering, hot wall vacuum evaporation, Close spaced sublimation, solvothermal, ball milling etc) for its application in photovoltaic devices.*
- ♣ *Expert in the preparation of nanostructured materials by Sputtering, normal evaporation, ball milling, microwave oven, ultrasonic spray deposition techniques. Worked in Vacuum system for more than 15 years and about 5 years in various spray deposition techniques*
- ♣ *Deposition of semiconductor and polymer thin films by electro deposition & electropolymerization*
- ♣ *Various characterization techniques like XRD, Spectrophotometer, SEM, AFM, TEM, HRTEM, Electrical (I-V, C-V, photoconduction, dielectric, etc.) etc*
- ♣ *Fabrication of solar cells and fuel cells – characterization, optimization and its possible application*
- ♣ *Design and Simulation of various nanostructured material properties using DMol3, CASTEP- specifically for the catalytic activities in fuel cells ; Also simulations of semiconductor materials for the solar cells*

Future plans and targets

- ✚ *To optimize nanostructured materials used in the fabrication of solar cells and fuel cells*
- ✚ *To set up pilot plant to manufacture CIGS based solar cells with cheap manufacturing technology incorporating nanostructures*
- ✚ *To contribute to the development of organic – Inorganic solar cells (CdSe-PMeT)*

incorporating nanostructures. This is the first step towards a very ambitious goal to achieve economical, affordable to common man – the plastic solar cells.

IV. Proficiency in Language:

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

English - 100% written and 100 % spoken

Spanish: 50% written and 80 % spoken

V. Participation in Projects & capacity to procure external funds

- 1) **Síntesis y Caracterización de Nanopartículas de Fe₃O₄ Core-Shell para Aplicaciones Virales**, CONACYT Project No **0168577 (Principal Investigator)**, Budget :1.8 Million Pesos valid upto July 2015
- 2) **Synthesis and characterization of pure and doped BiVO₄ for photocatalytic applications**, Fondo Cinvestav-Univ du Maine (France) a joint project valid up to Dec 2013, Budget: 10,000 Euros
- 3) **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: \$ 40 Million Pesos**
- 4) **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**
- 5) **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 (PI) & 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.
- 6) Fabrication of high efficiency solar cells using nanostructured materials, **(Principal Investigator) GOOGLE-TEC innovation cell, Tecnológico de Monterrey- campus Monterrey, Mexico, Budget; \$ 175,000 USD(April 2007 – March 2009)**
- 7) **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
- 8) **Titanium dioxide (TiO₂) Nano tube 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)

- 9) **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
- 10) 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.
- 11) **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

- 1) Examination of semiconductor circuits using FIB and SEM – 40,000.00 MN Pesos from ATL, Mexico city
- 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
- 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
- 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
- 5) Recubrimientos nanoestructurados para tubos de inhaladores portátiles **CONACYT Project No 198470** with industry 3G BIODesarrollo S.A. DE C.V, Budget: \$200,000 valid till 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 Petróleo, 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)

VI. Distinctions:

a. Academic

1. Editorial Board member, Materials Science in Semiconductor Processing, Elsevier Journal
2. **Scientific Reviewer** – International journals :
 - 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
3. **Guest Editor**, Special issue from the journal “Advanced Materials Research”, under the title “Advances in nanomaterials” (A TransTech Publication, Switzerland), for the conference “International Conference on nanoscience and nanotechnology, held at Coimabto, India during July 2012- To be published in 2012.
4. **Guest Editor**, Special issue from the journal “Materials Science Engineering B”, an Elsevier publication for the IMRC 2011, Volume 177, No 16, 20 September 2012 **ISSN 0921-5107**
5. **Guest Editor**, Special issue from the journal “Materials Science Engineering B”,

- an Elsevier publication for the IMRC 2010, Volume 176, Issues 17, Oct 2011
6. **Guest Editor**, Special issue from the journal "Materials Science Engineering B", an Elsevier publication, Volume 174, Issues 1-3, Oct 2010
 7. **Guest Editor**, Special issue from the Journal of NanoResearch" (A TransTech Publication) for 3rd Mexican Workshop on Nanostructured Materials, Volume 9, published in 2010
 8. **Guest Editor**, Special issue from the journal "Vacuum", an Elsevier publication, Vol 84, issue 10, May 2010
 9. **Guest Editor**, Special issue from the journal "Advanced Materials Research", under the title "Advances in semiconducting Materials" (A TransTech Publication, Switzerland), Vol 68, ISBN 0-87849-323-9, 2009.
 10. **Editorial board member**, NanoTrends, A journal of Nanotechnology and its Applications, An International Online BiMonthly Publication, ISSN 0971-418X
 11. **Guest Editor**, Special issue from the journal "Materials Characterization" (An Elsevier Publication) for IMRC-2005, Vol 58, Issue 8-9, 2007
 12. **Guest Editor**, Special issue from the journal "NanoTrends, A journal of Nanotechnology and its Applications" (An International Journal from Nano Science and Technology Consortium, C-56, A/ 28, Sector-62, Noida, U.P., India) for an International conference - Nanotech-2006 held at Coimbatore Institute of Technology, Coimabtoe India from 25th to 28th June 2006.
 13. Awarded **young scientist** fellowship by TamilNadu State Council for Science and Technology, Chennai, India (1995).
 14. Best poster presentation award in National Science Congress, Anna University, Chennai, India (1999).
 15. Sistema Nacional de Investigadores (SNI), México – Nivel II. A National scholarship given to researchers in Mexico directly by the Department of science and Technology (CONACYT and equivalent of NSF in USA).
 16. 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. **Coordinator for International Relations:** taking 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 2014)
2. In last four years of my responsibility as coordinator for International relations, visited more than 15 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 creation of joint funds and improving collaborations.
 4. Participated in various Educational Fairs (Exhibitions) like NAFSA, Becas Chile, international & National exhibitions representing Cinvestav
 5. **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/>
 6. 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
 7. Consultative board member in the Energy and Nanoscience and Nanotechnology oriented committee's in the Mexican education council (CONACYT)
 8. **Founder and Chairman**, Cinvestav Criquet Club (CCC), 2010

VII. Publication in INTERNATIONAL / NATIONAL Journals

Editorial

1. **Editorial**, S.Velumani, Special issue for IMRC2013 held in Mexico, Materials Science in Semiconductor Processing, 37(2015)1-2
2. **Editorial: 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 Volume: 177 Issue: 16 Pages: 1415-1416 DOI: 10.1016/j.mseb.2012.08.023 Published: SEP 20 2012
3. **Editorial**, S.Velumani and N.Muthukumarasamy, Special issue in "Advanced Materials Research", TransTech Publications Switzerland, for the The International Conference on Nanoscience and Nanotechnology (ICNN2011) held during July 6-8, 2011 at

Coimbatore, India organized by Coimbatore Institute of Technology, India jointly with Centro de Investigacion y de Estudios Avanzados del IPN (CINVESTAV), Mexico City.

4. **Editorial:** Guest Editor, Special issue from the journal “Materials Science Engineering B”, an Elsevier publication for the IMRC 2010, Volume 176, Issues 17, Oct 2011, 1314
5. **Editorial:** Ignatiev A and **Subramaniam Velumani**, Symposium on Advances in Semiconducting materials, XVI International Materials Research Conference, Vaccum, 84 (2010) 1181
6. **Editorial:** S.Velumani, R.Asozoza, Umapada Pal, Special issue for the 3rd Mexican Workshop on nanostructured Materials held in Cinvestav, Mexico. Journal of Nano Research , ISSN 1662-5250, Vol 9 (2010)
7. **Editorial:** **S.Velumani**, R.Asozoza, “Advances in semiconducting Materials”, Advanced Materials Research, (2009) vol 68.
8. **Editorial :** **S.Velumani** and T.Kannadasan, Nanotrends: A Journal of Nanotechnology and its Applications, Vol 4, Iss 1, (2008) 1

In Peer reviewed International Journals

2015

1. 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.
2. Victor-Ishrayelu Merupo, Velumani Subramaniam, NicolasErrien, JacekSzade and Abdel-Hadi Kassiba, Structural and optical characterization of ball milled copper doped bismuth vanadium oxide (BiVO₄), , CrystEngComm 17 (2015) 3366-3375.
3. Babu B.J, Velumani Subramaniam, Kassiba A, Asozoza A, Chavez-Carvayar J.A, Junsin Yi, Deposition and Characterization of Graded Cu(In_{1-x}Ga_x)Se₂ Thin Films by Spray Pyrolysis,– Materials Chemistry and Physics (2015), In Press.
4. B. J. Babu, S. Velumani, Brian J. Simonds, Richard K. Ahrenkiel and R. Asozoza Effect of sodium doping on graded Cu(In_{1-x}Ga_x)Se₂ thin films prepared by chemical spray pyrolysis, Materials Science in Semiconductor Processing 37(2015) 37-45.

5. Reyes-Figueroa P; Painchaud T; Harel S; Arzel L; Barreau N; Velumani S, Junsin Yi, Structural properties of In₂Se₃ precursor layers deposited by spray pyrolysis and physical vapor deposition for CIGSe thin-film solar cell applications, *Thin Solid Films*, *Thin Solid Films* 587 (2015) 112-116.
6. M. Ravichandran, Goldie Oza, S.Velumani, Jose Tapia Ramirez ^c, Francisco Garcia-Sierra, Norma Barragán Andrade, Marco A.Garza-Navarro, Domingo I.Garcia-Gutierrez, and Junsin Yi, Cobalt Ferrite Nanowhiskers as T2 Contrast agent in MRI , *RSC ADVANCES* 5-22 (2015) 17223-17227.
7. M.Rohini, P.Reyes, S.Velumani, M.Latha, Goldie oza, I. Becerril-Juarez, Parametric Optimization of Mechanochemical process for synthesis of Cu(In,Ga)_{0.5}Se₂ nanoparticles, *Materials Science in Semiconductor Processing* 37 (2015) 151-158.
8. M.Latha, R. Aruna Devi, S.Velumani, Goldie oza, P. Reyes-Figueroa, M. Rohini, I. G. Becerril-Juarez and Junsin Yi, Synthesis of CuIn_{1-x}Ga_xSe₂ nanoparticles by thermal decomposition method with tunable Ga content,– *Journal of Nanoscience and Nanotechnology* 15 (2015) 1-7.
9. R.Aruna Devi, M.Latha, S.Velumani, Goldie oza, P. Reyes-Figueroa, M. Rohini, I. G. Becerril-Juarez and Junsin Yi, Synthesis and characterization of cadmium sulfide nanoparticles by chemical precipitation method, - *Journal of Nanoscience and Nanotechnology* 15 (2015) 1-6.
10. G.Rajesh, N.Muthukumarasamy, E.P.Subramanian, M.RVenkatraman, V.Ragavendran, M.Thambidurai, S.Velumani, Junsin Yi and Dhayalan Velauthapillai, Low temperature, high yield synthesis of CZTS (Cu₂ZnSnS₄) quantum dots, *Superlattices and Microstructures*, 77 (2015) 305–312.
11. Yongye Liang, Kyungsoo Jang, S.Velumani, Cam Phu Thi Nguyen, Junsin Yi, Effects of interface trap density on the Electrical Performance of Amorphous InSnZnO Thin-Film Transistor, *Journal of Semiconductors* 36-2 (2015) 024007-024011.
12. Jayapal Raja, Kyungsoo Jang, Shahzada Qamar Hussain, Nagarajan Balaji, S.Velumani, Somenath Chatterjee, Junsin Yi, Boosting the mobility and bias stability of oxide-

- based thin-film transistors with ultra-thin nanocrystalline InSnO:Zr films, *Applied Physics Letters*, 106(2015) 033501
13. Jayapal Raja, Sungwook Jung, Kyungsoo Jang, Zhenghai Jin, S.Velumani, Somenath Chatterjee, Junsin Yi, Improvement of data retention characteristics of OSOS multi-stacked MIS capacitor for flat panel display technology, *Materials Science in Semiconductor Processing* 37 (2015) 9-13.
 14. L. Mentar, O. Baka, M. R. Khelladi, A. Azizi, S.Velumani, G. Schmerber, A. Dinia, Effect of nitrate concentration on the electrochemical growth and properties of ZnO nanostructures, *Journal of Material Science: Mater Electron* 26-2 (2015) 1217-1224.
 15. Hyeongsik Park, Shahzada Qamar Hussain, Subramaniam Velumani, Anh Huy Tuan Le, Shihyun Ahn, Sunbo Kim, and Junsin Yi, Influence of working pressure on the structural, optical and electrical properties of sputter deposited AZO thin films, *Materials Science in Semiconductor Processing* 37 (2015) 29-36.
 16. Shahzada Qamar Hussain, Giduk Kwon, Shihyun Ahn, Sunbo Kim, Anh Huy Tuan Le, Hyeongsik Park, Jayapal Raja, Nagarajan Balaji, S.Velumani, Didier Pribat, Junsin Yi, Uniform hydrothermally deposited zinc oxide nanorods with high haze ratio for amorphous silicon thin film solar cells, *Materials Science in Semiconductor Processing* (2015), In Press.
 17. Shahzada Qamar Hussain, c, Gi Duk Kwona, Shihyun Ahnb, Sunbo Kima, Hyeongsik Parkb, Anh Huy Tuan Leb, Chonghoon Shina, Sangho Kima, Shahbaz Khana, Jayapal Rajab, Nagarajan Balajia, S. Velumanib, d, Didier Pribata, Junsin Yia, b, SF₆/Ar plasma textured periodic glass surface morphologies with high transmittance and haze ratio of ITO:Zr films for amorphous silicon thin film solar cells, *Vacuum*, 117(2015)91-97
 18. Shahbaz Khan, Shahzada Qamar Hussain, Doyeon Kim, S.Velumani, Hyoyoung Lee, Light trapping of hydrogen doped zinc oxide nano-flowers and nano-flakes having high haze ratio for silicon solar cell, *Materials Science in Semiconductor Processing* 37 (2015) 51-56.

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19. Shahzada Qamar Hussain, Woong-Kyo Oh, Shihyun Ahn, Anh Huy Tuan Le, Sunbo Kim, S.M. Iftiqar, **Subramaniam Velumani**, Youngseok Lee, Junsin Yi, Highly transparent RF magnetron-sputtered indium tin oxide films for a-Si:H/c-Si heterojunction solar cells amorphous/crystalline silicon, - *Materials Science in Semiconductor Processing*, Volume 24, August 2014, Pages 225–230
<http://dx.doi.org/10.1016/j.mssp.2014.02.044>
20. Hussain, Shahzada Qamar; Oh, Woong-Kyo; Kim, Sunbo; Ahn, Shihyun; Le, Anh Huy Tuan; Park, Hyeongsik; Lee, Youngseok; Dao, Vinh Ai; **Velumani, S.**; Yi, Junsin, Study of Low Resistivity and High Work Function ITO Films Prepared by Oxygen Flow Rates and N₂O Plasma Treatment for Amorphous/Crystalline Silicon Heterojunction Solar Cells, *Journal of Nanoscience and Nanotechnology*, Volume 14, Number 12, December 2014, pp. 9237-9241(5); doi:10.1166/jnn.2014.10142
21. Garrido-Hernández A, García-Murillo A, Carrillo-Romo F de J, Cruz-Santiago L A, Chadeyron G, Morales-Ramírez A de J, **Velumani S**, Structural studies of BaTiO₃:Er³⁺ and BaTiO₃:Yb³⁺ powders synthesized by hydrothermal method, , *JOURNAL OF RARE EARTHS*, Vol. 32, No. 11, Nov. 2014, P. 1016 DOI: 10.1016/S1002-0721(14)60176-9; DOI: 10.1016/S1002-0721(14)60176-9
22. M.L. Carrera Jota, A. García Murillo, F. Carrillo Romo, M. García Hernandez, A. de J. Morales Ramirez, **S. Velumani**, E. de la Rosa Cruz, Abdelhadi Kassiba, Lu₂O₃:Eu³⁺ glass ceramic films: Synthesis, structural and spectroscopic studies, *Materials Research Bulletin* 51 (2014) 418–425;
<http://dx.doi.org/10.1016/j.materresbull.2013.12.029>
23. J. Reyes Miranda, A. García Murillo, F. de J. Carrillo Romo, J. Oliva Uc, C. A. Flores Sandoval, A. de J. Morales Ramírez, **S. Velumani**, E. de la Rosa Cruz, V. Garibay Febles, Synthesis and optical properties of BaTiO₃:Eu³⁺@SiO₂ glass ceramic nano particles, *Journal of Sol-Gel Science and Technology*, December 2014, Volume 72, Issue 3, pp 435-442; DOI 10.1007/s10971-014-3480-8
24. O. Baka, A. Azizi, **S. Velumani**, G. Schmerber, A. Dinia, Effect of Al concentrations on the electrodeposition and properties of transparent Al-doped ZnO thin films, , *Journal*

- of Materials Science: Materials in Electronics, April 2014, Volume 25, Issue 4, pp 1761-1769; DOI 10.1007/s10854-014-1796-3
25. Esparza, R, Téllez-Vázquez O, Rodríguez-Ortiz, G, Ángeles-Pascual, A, **Velumani, S**, Pérez, R, Atomic structure characterization of Au-Pd bimetallic nanoparticles by aberration-corrected scanning transmission electron microscopy, Journal of Physical Chemistry C, Volume 118, Issue 38, 25 September 2014, Pages 22383-22388; dx.doi.org/10.1021/jp507794z
 26. Ramírez-Rodríguez, L.P., Cortez-Valadez, M. , Bocarando-Chacon, J.-G., Arizpe-Chávez, H., Flores-Acosta, M., **Velumani, S.**, Ramírez-Bon, R, Plasmon resonance and raman modes in p<lc>b</lc> nanoparticles obtained in extract of opuntia ficus-indica plant, Nano, Vol. 9, No. 6 (2014) 1450070 ; DOI: 10.1142/S1793292014500702
 27. M. Adiraj Iyer, Goldie Oza, **S. Velumani**, Arturo Maldonado, Josue Romero, M. de L. Munoz, M. Sridharan, R. Asomoza, Junsin Yi, Scanning fluorescence-based ultrasensitive detection of dengue viral, DNA on ZnO thin films - Sensors and Actuators B: Chemical, 202 (2014) 1338–1348

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28. N. Morales-Flores, R. Galeazzi, E. Rosendo, T. Díaz, S. Velumani, and U. Pal, Morphology control and optical properties of ZnO nanostructures grown by ultrasonic synthesis, Advances in Nano Research, Vol. 1, No. 1 (2013) 59-70.
29. Rajalingam Venkatesan, Subramaniam Velumani, Mohamed Tabellout, Abdelhadi Kassiba, Dielectric behavior, conduction and EPR active centres in BiVO₄ nanoparticles, Journal of Physics and Chemistry of Solids, 74(2013)1695-1702
<http://dx.doi.org/10.1016/j.jpcs.2013.06.011>

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30. Reyes P., Velumani S; Structural and optical characterization of mechanochemically synthesized copper doped CdS nanopowders MATERIALS SCIENCE AND ENGINEERING B-ADVANCED FUNCTIONAL SOLID-STATE MATERIALS Volume: 177 Issue: 16 Pages: 1452-1459 DOI: 10.1016/j.mseb.2012.03.002 Published: SEP 20 2012

31. Venkatesan R, Velumani S, Kassiba, Mechanochemical synthesis of nanostructured BiVO₄ and investigations of related features : MATERIALS CHEMISTRY AND PHYSICS Volume: 135 Issue: 2-3 Pages: 842-848 DOI: 10.1016/j.matchemphys.2012.05.068 Published: AUG 15 2012
32. Ramireddy TR, Venugopal V, Bellam JB, Maldonado A , Vega-Perez J , **Velumani S**, Olvera, MD, Effect of the Milling Time of the Precursors on the Physical Properties of Sprayed Aluminum-Doped Zinc Oxide (ZnO:Al) Thin Films, MATERIALS Volume: 5 Issue: 8 Pages: 1404-1412 DOI: 10.3390/ma5081404 Published: AUG 2012
33. Jose A.Andraca Adame, Velumani Subramaniam, Josue Romero Ibarra, Synthesis of Aluminium doped zinc oxide nanowires hydrothermally grown on plastic substrates, Advances in materials Physics and Chemistry, ISSN:2162-513D, Oct 2012.

2011

34. Y. Matsumoto, S. Godavarthi, M. Ortega, V. Sánchez, **S. Velumani** and P. S. Mallick, Size modulation of nanocrystalline silicon embedded in amorphous silicon oxide by Cat-CVD, Thin Solid films **ISSN 0040-6090** 519; 14 (2011)4498-4501
35. B. J. Babu, **S. Velumani** and A. Kassiba, Structural and Dielectrical studies on Mechano-chemically Synthesized In doped CdS nanopowders, Journal of Material Science, 46(2011)5417-5422.
36. B.Vidhya, **S.Velumani**, R.Asomoza, Effect of milling time and heat treatment on the composition of CuIn_{0.75}Ga_{0.25}Se₂ nanoparticle precursors and films, Journal of nanoparticle Research, 13(2011)3033-3042

2010

37. **S.Velumani**, Carlo Enrique Guzmán, Ricardo Peniche and Ramon Vega, Proposal of a Hybrid CHP system: SOFC/Microturbine/Absorption Chiller, International Journal for Energy Research 34(2010)1088-1095.
38. Mauricio Garza Castañón, **S. Velumani**, Oxana V Kharissova, Marco A. Jiménez and Arunachala M. Kannan, CO adsorption in Pd_xCo_yX_z (X=Au, Mo, Ni) tertiary alloy

Nano-catalysts for PEM fuel cells – A theoretical analysis, International Journal for Energy (Available online DOI: 10.1002/er.1714)

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VIII. Contributions in the book

1. “Nanomaterials for Energy storage applications” Chapter XX, American Scientific Publishers, Edited by Hari Singh Nalwa, 2008. Authors: 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.
2. “Energy-Efficient, cost-Effective and environmentally – sustainable systems and processes” by K.Gurunathan and **S.Velumani**; Edited by R.Rivero, R.Pulido and G.Tsatsaronis Vol 3 (2004)1447-1457, ISBN:968-489-027-3.

IX. Invited Lecture

- 1) Invited speaker: First Euro-Mediterranean Conference on Materials and Renewable Energies, Nov 21 to 25, 2012, Marekech, Morocco: Title Development of low cost non-vacuum processing techniques for fabrication of nano structure based CIGS PV devices.
- 2) Plenary Speaker: Megatentencias organised by State of Coahuila 6th Oct 2010 “ Role of Nanostructured Materials in Energy storage devices: Solar and Fuel cells, Saltillo, Coahuila.
- 3) Plenary speaker: I Simposio: Materials Ceramicos y sus Potenciales Aplicaciones 23 to 27 Aug 2010, “Ceramic Nanostructures and its applications in Fuel cells(SOFC)”, Panama
- 4) Plenary Speaker : 4th International Conference on Nanotechnology - Occupational and Environmental Health (NanOEh2009), 26-29 August 2009, Paasitorni, Helsinki, Finland; www.ttl.fi/nanoeh2009
- 5) Invited speaker - **nanoTX'07** nanotechnology conference and trade show, at the Dallas Convention Center on October 2007, Dallas, TX (www.nanotx.biz)
- 5) Invited speaker - **nanoTX'06** nanotechnology conference and trade show, at the Dallas Convention Center on September 27-28, 2006, Dallas, TX (www.nanotx.biz)
- 4) Invited speaker, Comparison of Aluminum and Stainless Steel Bipolar Plates for PEM Fuel Cells Using a Forced Flow-Through Design, IMRC 2005.
- 5) Fuel cells and its applications, Seminar in Department of Chemistry, ITESM-Campus Monterrey, Aug 2005
- 6) Congreso Nacional de Química Industrial 2005, Invited plenary lecture – “Influence of nanostructures in the solar cells” – UANL – Chemistry on 27th April 2005.
- 7) Fuel cells and its applications – invited presentation in the UANL, Department of

- Fisica-Mathematica (April 21st 2005)
- 8) Fuel cells and Nanostructures – invited presentation in the UANL, Facultad Ciencias Quimicas (Marzo 03 de 2005)
 - 9) X-ray Diffraction - **principles, operations and applications in nanostructures”** – Instituto Mexicano del Petróleo, Mexico. 12th April 2004
 - 10) Invited speaker, Influence of nanostructures in solar cells – Symposium on Nanostructured Materials and nanotechnology, XII International Materials Research Congress, Cancun, Mexico, 19th Aug.2003
 - 11) 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.
 - 12) Fuel cell development and commercialization – Government college of Technology, Coimbatore, India. 6th May 2003
 - 13) Cadmium telluride solar cells on flexible metallic substrates at Department of Physics, Jamia Millia Islamia University, New Delhi in May 2002.
 - 14) Application of thin film in the development of modern computers - November 2000, At Erode Arts College, Erode, Periyar District. Tamilnadu, India.

X. Human Resource Development

- ♣ **Coordinator**, National Laboratory for the high resolution Microscopes at Cinvestav, Mexico
- ♣ **Coordinator** for International Relations and helping foreign students to get admission in Cinvestav
- ♣ **Academic** Coordinator for new program “Doctorado en Nanociencias y Nanotecnologia” at Cinvestav
- ♣ Actively participating in the formation of new Research Chair on Nanotechnology, ITESM-campus Monterrey, Mexico, 2005.
- ♣ Visited 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 University of Houston at Texas, under the exchange program to set up a research chair on nanotechnology at ITESM- campus Monterrey
- ♣ Setting 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 Blackett Laboratory, Dr.Keith W.Barnham, Prof. of Physics, **Imperial**

College of Science, Technology and Medicine, **London** to discuss about the possible collaboration work with Solar Hydrogen Fuel cell group, CIE-UNAM, Mexico on 28th May 2002.

- ♣ Started **M.Phil. Physics course**, a research degree in the Department of Physics, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India – 1999.
- ♣ 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.

XI. Project Thesis

Undergraduate students

1. Ernesto Efren Velazquez Romo, Conceptual design and production of fuel cell stack assemblies using product lifecycle management tools, a joint project with Ecole D’Ingenieurs, France - Jan-May 2007
2. Eduardo Loza Aguirre, Design and formal characterization of a PEM fuel cell with Teflon for bipolar plate and Nickel mesh for current collector, Aug-Dec 2007
3. Andrés Vargas Lugo Cantú - Computational Simulation of Pd₇₀Co₂₀Mo₁₀ as a catalyst for the Proton Exchange Membrane Fuel Cell – Jan – June 2006
4. Carlos E. Ortiz Díaz - Computational Simulation of Pd₇₀Co₂₀Au₁₀ as a catalyst for the Proton Exchange Membrane Fuel Cell - Jan – June 2006
5. Gerson Vazquez – Design and Fabrication of metallic bipolar plates for PEM fuel cells. – Jan – June 2005
6. “Microprocessor controlled character generation” – 1989. Department of Physics, Coimbatore Institute of Technology, Coimbatore, India, Students: P.Amsaveni, K.Geetha, J.Hemalatha, B.Jayanthi and R.Uma Maheswari.
7. “LCD Thermometer” – 1990, Department of Physics, Coimbatore Institute of Technology, Coimbatore, India, Students: G.Jawahar, S.Navaneethan, V.R.Parthasarathi and C.Rajagopal.
8. “Generalized invoice package in “C” “- 1992, Department of computer Science and Applications, Coimbatore Institute of Technology, Coimbatore, India, Students: R.Gayathri, R.Jayasathya, S.Meenaparameswari and D.Saraswathi

9. “Computerized office maintenance system” – 1993, Department of computer Science and Applications, Coimbatore Institute of Technology, Coimbatore, India, Students: V.Jaisudha, P.Parvatha Devi, N.Reehana Banu, G.Rohini Rao and C.Subhasree
10. “Microprocessor controlled character Display” – 1993, Department of Physics, Coimbatore Institute of Technology, Coimbatore, India, Students :Anand Krishnamurthy, Jaideep Jaganathan and S.Sivakumar
11. “Structural and photoconductive properties of CdSe thin film” – 1994, Department of Physics, Coimbatore Institute of Technology, Coimbatore, India, Students : N.Babu and S.Balaji
12. “Digital thermometer and temperature controller” – 1996, Department of Physics, Coimbatore Institute of Technology, Coimbatore, India, Students : V.Madhu, V.Govindaraj and V.Muthukrishnan

Postgraduate (Masters) students

1. Preparation and characterization of Fe₃O₄ nanostructures for cáncer treatment, Student Fís. Luis Abraham García Hernández, Department of Electrical Engineering (SEES), Cinvestav, Mexico 2013 -2014
2. Chaterization of nanostructures using FESEM, HRTEM, SPM and FIB, Student – Maheswar Iyer, Sastra University, India.
3. Preparation and characterization of Fe₃O₄ nanostructures for cáncer treatment, Student – Jyothi, Sastra University, India.
4. Design and construction of a deposition system to prepare thin films of ball milled CuIn(x)Ga(1-x)Se₂ nanopowders, Student: Ing. Pablo Itzam Reyes Figueroa, Department of Electrical Engineering (SEES), Cinvestav, Mexico 2009 -2011
5. Deposition of Flourine doped zinc oxide thin films by chemical spray pyrolysis and study of the aging effect, Rajesh Roshan Biswal, Amity University, India – project carried out at Cinvestav 2009.
6. “Feedback control system from a power converter to the PEM fuel cell”
Course : Master in Science with Specialization in Energetic Engineering, ITESM- Campus Monterrey, NL, Mexico. 2008
Student : Ing. Fernando Martell

4. "Structural and optical properties of CdSe and ZnS films ", 2000
Course : M.Phil. Thin film Physics, Department of Physics, Coimbatore Institute of Technology, Coimbatore, Tamilnadu, India
Student : S.Venkatachalam
5. Light weight Bipolar plates for Fuel cells- under progress
Student: Marcos Cuellar Hernández
Course : Postgrado, Department of solar Materials,CIE-UNAM, Temixco, Mexico.
6. Characterization of cobalt manganese thin films prepared by electrodeposition.
Student: T.Kaleeswaran (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March 2004
7. Electro crystallization of ferrous selenide and cadmium ferrous selenide thin films
Student: S.Thanikaikarasan (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March 2004
9. Electrosynthesis of lead oxide thin films
Student: M.Dhanasekaran (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March 2004
10. Electroplating and studies of nickel phosphorous alloy thin films
Student: M.Shanthakumari (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March 2004
11. Electrodeposition and studies of nickel ferrous alloy thin films
Student: R.Sangeetha (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March 2004
12. Preparation and studies of cobalt phosphorous alloy thin films
Student: P.Thillai Jothi (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March 2004
13. Growth and studies of cobalt nickel alloy thin films
Student: K.Shanmuga priya (Co-Guide)
Course : M.Sc., (Physics) Department of Physics, Alagappa University, Karaikudi, India. March

Doctoral students

1. Ing. Mauricio Garza (Completed 2008)
Doctorado en Ingeniería Física Industrial, División de Estudios de Postgrado e Investigación Científica, Facultad de Ciencias Físico-Matemáticas, Universidad Autónoma de Nuevo León (Co-guide)
Thesis: Synthesis and Characterization of Nanostructured catalysts for fuel cells".
2. Ing. Rodrigo Cue Sampedro, (Completed Sept 2009)
Thesis: Fabrication of microwave oven setup for depositing semiconductor nanostructures for photovoltaic applications
Doctorado en Ingeniería, ITESM –Campus Monterrey, NL, México.
3. Vidhya Bhojan (Completed Sept 2010)
Thesis: Fabrication of CVD deposition setup and preparation of CIS/CdS nanostructured materials solar cells.
Doctorado en Ciencias en Ingeniería Eléctrica, CINVESTAV-Zacatenco, D.F. México.
4. Jagadeesh Babu Bellam(Completed Sept 2012)
Thesis: Optimization of Cu-In(x)-Ga(1-x)-Se thin film structure for its maximum absorbance in photovoltaic applications
Doctorado en Ciencias en Ingeniería Eléctrica, CINVESTAV-Zacatenco, D.F. México.
5. Venkatesh Ramalingam (under progress)
Thesis: Synthesis and Characterization of Bismuth Vanadate nanostructures
Doctorado en Ciencias en Nanociencias y Nanotecnología, CINVESTAV-Zacatenco, D.F. México
6. Pablo Reyes Figueroa (under progress)
Thesis: Synthesis and Characterization of Bismuth Vanadate nanostructures
Doctorado en Ciencias en Nanociencias y Nanotecnología, CINVESTAV-Zacatenco, D.F. México
7. Rohini N Mohan (under progress)
Thesis: Synthesis and characterization of CIGS thin film by sputtering/co-evaporation and optimization of selenization".
Doctorado en Ciencias en Ingeniería Eléctrica, CINVESTAV-Zacatenco, D.F. México.
8. Victor Isreal (under progress)
Thesis: Synthesis and characterization doped bismuth vanadate nanostructures
Doctorado en Ciencias en Ingeniería Eléctrica, CINVESTAV-Zacatenco, D.F. México.

9. Latha Priya (under progress)

Thesis: Synthesis and characterization of CIGS nanostructured thin film
by co-evaporation technique

Doctorado en Ciencias en Nanociencias y Nanotecnología, CINVESTAV-Zacatenco, D.F.
México

10. Aruna Devi (under progress)

Thesis: Synthesis and characterization of nano-CdS thin film and deposition of it over
CIGS and analysis of CIGS/nano-CdS junction properties

Doctorado en Ciencias en Nanociencias y Nanotecnología, CINVESTAV-Zacatenco, D.F.
México

XII. Courses offered for under graduate and postgraduate students

Courses taught in Mexico.

2013

1. Introduction to nanoscience and Nanotechnology- for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología
2. Nanostructured Materials – for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología

2012

1. Introduction to nanoscience and Nanotechnology - for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología
2. Nanostructured Materials – for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología

2011

1. Introduction to nanoscience and Nanotechnology - for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología
2. Nanostructured Materials – for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología

2010: Feb – July

1. Introduction to nanoscience and Nanotechnology - for Masters' & PhD students in Electrical Engineering & Programa de nanociencias y nanotecnología
2. Nanostructured Materials – for Masters' & PhD students in Electrical Engineering &

Programa de nanociencias y nanotecnología

2009- Jan – April

1. Nanostructured Materials – for Masters' and Electrical Engineering students

2007 Aug – Dec – ITESM- Campus Monterrey

1. Introduction to Nanotechnology – Master in Manufacturing Systems (MSM) – postgraduate course

2. Photovoltaic cells – Engineering Physics Students – Undergraduate course

2007 Jan – May ITESM – Campus Monterrey

1. Fuel cell – Principle, operations and applications (Final year) student of Industrial Engineering Physics

2. Materiales para la Manufactura (M 99234.1) - Introduction to Nanotechnology & fuel cells (postgraduate students)

2006 Aug – Dec - ITESM – Campus Monterrey

1. Physics I (Serway & Jewett) for undergraduate students

2. Nanostructured Materials (Final year student) of Industrial Engineering Physics students

3. Materiales para la Manufactura (M 99234.1) - Introduction to Nanotechnology & fuel cells (postgraduate students)

2006 Jan – May ITESM – Campus Monterrey

1. Physics I (Serway & Jewett) for undergraduate students

2. Fuel cell – Principle, operations and applications (Final year) student of Industrial Engineering Physics

2005 Aug – Dec – ITESM – Campus Monterrey

1. Physics 1 (Serway & Jewett) for undergraduate students

2. Principles of Nanotechnology

3. Fuel cell Science and Engineering – Post graduate course

2005 Jan – May - ITESM – campus Monterrey

1. Physics 1 (Serway & Jewett) for undergraduate students

2. Fuel cell – Principle, operations and applications

Courses taught in India

1999 - 2001

1. Engineering Physics (Resnick and Halliday) for I and II semester undergraduate students

2. Materials science for post graduate Students

3. Thin film physics for post graduate students

4. Engineering Physics laboratory for I and II semester students
5. Thin film laboratory for post graduate students

1997 – 99

1. Engineering Physics (Resnick and Halliday) for I and II semester students
2. Materials science for post graduate Students
3. Thin film physics for post graduate students
4. Engineering Physics laboratory for I and II semester students

1995 – 96

1. Engineering Physics (Resnick and Halliday) for I and II semester students
2. Microprocessors and its applications for VI semester students
3. Basic Physics laboratory for I and II semester

1992 – 94

1. Basic Physics (Resnick and Halliday) for I and II semester students
2. Microprocessors and its applications for VI semester students
3. Basic Physics laboratory for I and II semester students
4. Digital circuits and microprocessor lab for V and VI semester students

1991 –92

1. Properties of matter and Heat & Thermodynamics for I semester students
2. Fundamentals of Digital electronics and digital computers for VI semester students
3. Basic Physics laboratory for I and II semester students
4. Digital circuits and microprocessor lab for V and VI semester students

1990 – 91

1. Materials Science for III semester students
2. Digital electronics for VI semester students
3. Basic Physics laboratory for I and II semester students
4. Digital circuits and microprocessor lab for V and VI semester students

1989 - 90

1. Physical Electronics for III semester students
2. Fundamentals of Digital Electronics for VI semester students
3. Microprocessors and its applications for V semester students
4. Digital electronics and microprocessor laboratory for V and VI semester students

1988 – 89

1. Properties of matter and Heat & Thermodynamics for I semester students.
2. Digital Electronics for VI semester students

3. Basic Electronics and digital electronics laboratory for III and IV semester students

1987- 88

1. Properties of matter and Heat & Thermodynamics for I semester students
2. Physical Electronics for III semester students
3. Basic Electronics laboratory for III and IV semester students.

1986 –87

1. Properties of matter and Heat & Thermodynamics for I semester students
 1. Thin film physics for VI semester students
 2. Basic Physics laboratory for I and II semester students

XIV. Seminar & Conferences Organized

Departmental seminars

- ✚ 12th Oct 2005 - “**Nanotechnology facts: From Energy to Environmental and Medicinal fields**” addressed by Dr.Jorge Ascencio, Instituto Mexicano del Petroleo, Mexico
- ✚ 19th Oct 2005 – “**Simulaciones de Nanoestructuras**” to be delivered by Dr. Sergio Mejia-Rosales, Profesor-Investigador, Facultad de Ciencias Fisico-Matematicas Universidad Autonoma de Nuevo Leon.
- ✚ 2nd Nov 2005 - “**Nanotubos de Carbón – Síntesis y Caracterización**”, delivered by Dra. Oxana V. Kharissova, Profesor-Investigador, Facultad de Ciencias Físico-Matemáticas Universidad Autónoma de Nuevo León

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

1. **Chairman** – for Symposium 9 on, “Advances in Semiconducting materials” IMRC2012, Aug 14 to 18, 2012, Cancun, Mexico.
2. **Chairman** – for Symposium 9 on, “Advances in Semiconducting materials” IMRC2011, Aug 16 to 20, 2011, Cancun, Mexico.
3. **International committee Chairman** – Workshop on Nanostructured Materials, July 9 to 11, 2011, at Coimbatore Institute of technology, Coimabtoe, India.
4. **Chairman** – for Symposium 9 on, “Advances in Semiconducting materials” IMRC2010, Aug 15 to 19, 2010, Cancun, Mexico.
5. **Chairman** – for Symposium 13 on, “Advances in Semiconducting materials” IMRC2009, Aug 16 to 20, 2009, Cancun, Mexico.
6. **Chairman** – Workshop on Nanostructured Materials, June 11 to 13, 2008, at Cinvestav,

Mexico.

7. **Chairman** – for Symposium 19 on, “Advances in Semiconducting materials” IMRC2008, Aug 17 to 21, 2008, Cancun, Mexico.
8. **Chairman** – for Symposium 19 on, “Advances in Semiconducting materials” IMRC2007, Oct 26 to 1st Nov 2007, Cancun, 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, 3rd 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 20th and 21st 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. **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.
22. **International Organizing Committee member**, International Symposium on Solar Hydrogen

Fuel cells –6, organized by XII International Materials Research Conference at Cancun, Mexico, 2002.

XV. Short term sabbatical work

- Visiting Professor, April 2012, Department of Nanoscience and Nanotechnology, Universidad du Maine, Le Mans, France
- Visiting Professor, April 2011, Department of Nanoscience and Nanotechnology, Universidad du Maine, Le Mans, France
- Visiting Professor, March 2010, Department of Nanoscience and Nanotechnology, Universidad du Maine, Le Mans, France
- Worked as **visiting Scientist** for 3 months, Department of Semiconducting Materials, University of Twente, Enschede, The Netherland – Funded by NanoForumEula
- Worked in 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.

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. Membership

PhD thesis evaluation (External Examiner) for

1. **Bharathair University, India**
2. **Multimedia University, Malaysia**
3. **MGR Medical University, India**

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, PhD 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, Post graduate 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

XVIII. Summer and winter courses attended

1. Nanostructured Materials and Fuel cells, CADI, Tecnológico 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.

XIX. Participation in International / National Conferences

1. B. J. Babu, M. A. Ruiz Preciado, M. Edely, A. Jouanneaux, **S. Velumani**, A. Kassiba, "Effect of annealing temperature on nickel titanate thin films prepared by co-sputtering process", Symposium 7A (0031-Invited talk), XXIII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, Mexico.
2. B. J. Babu, **S. Velumani**, B. J. Simonds, R. K. Ahrenkiel, A. Kassiba, R. Asomoza, "Effect of sodium doping on graded $\text{Cu}(\text{In}_{1-x}\text{Ga}_x)\text{Se}_2$ thin films prepared by chemical spray pyrolysis", Symposium S7A (Poster 090), XXIII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, México.
3. B. J. Babu, **S. Velumani**, J. Arenas-Alatorre, A. Kassiba, R. Asomoza, "Structural properties of ultrasonically sprayed Al-doped ZnO (AZO) thin films: effect of ZnO buffer layer on AZO", Symposium S7A (Poster 088), XXIII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, México
4. Abraham García, **Velumani** Subramaniam, Goldie Oza, René Azomoza "Implementation of a surface plasmon resonance sensor using Au-Fe₃O₄ nanoparticles" Symposium 2B XXIII International Materials Research Congress, IMRC-2014, Aug 17-21, Cancún, México

5. M.Latha, R.Aruna Devi, **S.Velumani**, I.G. Becerril-Juarez, R.Asozoza and Junsin Yi "Synthesis and characterization of cigs nanoparticles by thermal decomposition method for solar cell applications" International Conference on Microelectronics and Plasma technology, ICMAP 2014, July 8-11, Gunsan, Korea.
6. M.Latha, R.Aruna Devi, **S.Velumani**, I.G. Becerril-Juarez, R.Asozoza and Junsin Yi "Formation mechanism of cigs nanoparticles by thermal decomposition method" XXII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, Mexico.
7. M.Latha, R.Aruna Devi, **S.Velumani**, I.G. Becerril-Juarez, R.Asozoza and Junsin Yi "Time-dependent cigs nanoparticle synthesis by hot injection method for solar cell applications" XXII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, Mexico.
8. M.Latha, R.Aruna Devi, **S.Velumani**, I.G. Becerril-Juarez, R.Asozoza and Junsin Yi "Formation mechanism of $\text{CuIn}_{0.7}\text{Ga}_{0.3}\text{Se}_2$ nanoparticles by thermal decomposition method" Global Photovoltaic Conference, International Symposium on Photovoltaics (ISP 2014) November 10-11, BEXCO, Busan, Korea.
9. R.Aruna Devi, M.Latha, **S.Velumani**, I. G. Becerril-Juarez, R.Asozoza and Junsin Yi "Synthesis and characterization of cds nanoparticles by chemical precipitation method" International Conference on Microelectronics and Plasma technology, ICMAP 2014, July 8-11, Gunsan, Korea.
10. R. Aruna Devi, M.Latha, **S.Velumani**, I. G. Becerril-Juarez, R.Asozoza and Junsin Yi "Effect of temperature on cds nanoparticles by co-precipitation method" XXII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, Mexico.
11. R. Aruna Devi, M.Latha, **S.Velumani**, I. G. Becerril-Juarez, R.Asozoza and Junsin Yi "Time-dependent cds nanoparticle by chemical precipitation method" XXII International Materials Research Congress, IMRC 2014, August 17-21, Cancun, Mexico.
12. R.Aruna Devi, M.Latha, **S.Velumani**, I.G.Becerril-Juarez, Jae-Hyeong Lee, Donguk Kim, Wonkyu Chae, Minha Kim and Junsin Yi "Synthesis and characterization of cds nanoparticles by co-precipitation method" Global Photovoltaic Conference, International Symposium on Photovoltaics (ISP 2014) November 10-11, BEXCO, Busan, Korea.
13. Goldie oza, M. Ravichandran, **S. Velumani**, R. Asomoza, Biological synthesis of metal sulfide semi-conducting nanocrystals, symposium 7A, Advances In Functional Semiconducting Materials, XXII International Materials Research Congress, IMRC-2014, August 17 - 21, Cancún, México.
14. M. Ravichandran, Goldie Oza, **S. Velumani**, Jose Tapia, Francisco Sierra-Garcia, Norma Barragan Andrade, R. Asomoza, Biological Synthesis of Semiconductor Zinc Sulfide Nanoparticles, symposium 7A, Advances In Functional

Semiconducting Materials, XXII International Materials Research Congress, IMRC-2014, August 17 - 21, Cancún, México.

15. García, G. Oza, **V. Subramaniam**, R. Asomoza, Physical Model of a Surface Plasmon Resonance Sensor, symposium 2B, Materials for Biosensor Applications, XXII International Materials Research Congress, IMRC-2014, August 17 - 21, Cancún, México.
16. M. Ravichandran, Goldie Oza, **S. Velumani**, Jose Tapia, Francisco Sierra-Garcia, Norma Barragan Andrade, R. Asomoza, Core/Shell Nanoclusters of Doxorubicin Functionalized Au-M (Co, Mn) Fe₂O₄: A Theranostic approach for Cancer Therapeutics, symposium 2C, Biomaterials for medical applications, XXII International Materials Research Congress, IMRC-2014, August 17 - 21, Cancún, México.
17. Goldie oza, R. Manisekaran, **S. Velumani**, Jose Tapia, Francisco Sierra-Garcia, Norma Barragán Andrade, R. Asomoza, Designing a drug-delivery vehicle with Au-Fe₃O₄-Graphene Quantum dots: A Tri-pronged mechanism for Bioimaging, synaphic delivery and apoptosis induction in Cancer cells, symposium 2C, Biomaterials for medical applications, XXII International Materials Research Congress, IMRC-2014, August 17 - 21, Cancún, México.
18. M.Victor Ishrayelu, N. Errien, **S. Velumani** and A. Kassiba, “solgel prepared copper doped bivo₄ pellets for photocatalyticapplications”.Oral presentation, XXII International Materials Research Congress, IMRC-2014, 17-22th August 2014, Cancun, Mexico.
19. M.Victor Ishrayelu, N. Errien, M.Edely, **S. Velumani** and A. Kassiba, “silver doped bivo₄ thinfilms with morphology of nanofibres deposited by rf sputtering technique”, Poster presentation XXII International Materials Research Congress, IMRC-2014, 17-22th August 2014, Cancun, Mexico.
20. M.Victor Ishrayelu, **S. Velumani**, A. Kassiba and M. A. García-Sánchez, “Structural and Optical properties of Molybdenum doped Bismuth vanadate powders”Oral presentation,11th International Conference on Electrical Engineering, ComputingScience and Automatic Control (CCE)- 30 Sept-3 Oct-2014, Ciudad del Carmen, Mexico.
21. M.Rohini, P.Reyes, **S.Velumani**, I. G. Becerril-Juárez , Junsin Yi “Structural properties of cigs thin film deposited by spin coating”, Symposium 7A, XIII International Materials Research Congress, IMRC-2014, Aug 17-21, Cancún, México.
22. M.Rohini, P.Reyes, **S.Velumani**, I.G.Becerril- Juárez “Effect of milling time on mechanically alloyed Cu(In,Ga)Se₂ nanoparticles”, Solid-state materials, Electron Devices and Integrated Circuits (SSM) 1, 11th International Conference on Electrical Engineering, Computing Science and Automatic Control,CCE-2014,Sep 29-Oct 3, Ciudad del Carmen, Campeche, Mexico.

23. M.Rohini , P.Reyes, **S.Velumani**, M.Latha, Goldie oza, I. Becerril-Juarez "Synthesis and optimization of cigs nanoparticle by mechanochemical process", symposium 7A (poster P073), XIII International Materials Research Congress, IMRC-2014, Aug 17-21, Cancún, México.
24. M.Rohini , P.Reyes, **S.Velumani**, M.Latha, Goldie oza, I. Becerril-Juarez "Structural and morphological studies of CIGS thin film deposited using nanoparticle based ink" Topic CIG (poster P-74),Global photovoltaic Conference,GPVC-2014,Nov 10-11,Busan,Korea.
25. Peacuterez-Caro, M.; Ramiacuterez-Loacuteppez, M.; Rojas-Ramiacuterez, J.S.; Martiacutenez-Velis, I.; Casallas-Moreno, Y.; Gallardo-Hernaacutendez, S.; Babu, B.J.; Velumani, S.; Loacuteppez-Loacuteppez, M., Group III-nitrides nanostructures , Source: AIP Conference Proceedings Volume: 1420 Pages: 164-8 Published: 2012 DOI: 10.1063/1.3678628, Conference Information: Advanced Summer School in Physics 2011: Eav2011 Mexico City, Mexico, 25-29 July 2011 AIP Conference Proceedings Volume: 1420 Pages: 164-8 Published: 2012 DOI: 10.1063/1.3678628
26. Venkatesan.Rajalingam, S.Velumani, A.Kassiba, Comprative Synthesis Routes For Photocatalytic Nanostructured Bismuth Vanadate, SYMPOSIUM : 1A. LOW DIMENSIONAL BISMUTH-BASED MATERIALS, (ORAL S1A-O021), XXI International Materials Research Congress, , IMRC-2012, Aug 12-17, Cancún, México.
27. Venkatesan.Rajalingam, S.Velumani, A.Kassiba, Growth Mechanism Of BiVO₄ Thin Films Deposited By Rf Sputtering And Its Characterization SYMPOSIUM : 1A. LOW DIMENSIONAL BISMUTH-BASED MATERIALS, (Poster S1A-P014) , XXI International Materials Research Congress, , IMRC-2012, Aug 12-17, Cancún, México.
28. J E Romero-Ibarra, I Blanco-Jarvio, V. Subramanian and P S Schabes-Retchkiman, Reverse-Micellar Synthesis Of Bismuth Colloidal Nanoparticles SYMPOSIUM : 1A. LOW DIMENSIONAL BISMUTH-BASED MATERIALS, (Poster S1A-P027), XXI International Materials Research Congress, , IMRC-2012, Aug 12-17, Cancún, México.
29. B. J. Babu, S. Velumani, Deposition And Characterization Of CIGS Based Superstrate Device Structure By Chemical Spray Pyrolysis, Symposium 6c. Advances In Semiconducting Materials (ORAL TALK6C-O023), Symposium: 6C. ADVANCES IN SEMICONDUCTING MATERIALS, XXI International Materials Research Congress, IMRC-2012, Aug 12-17, Cancún, México.
30. De Vizcaya-Ruiz, M. Esquivel-Gaón, O. Barbier, M. Uribe-Ramirez, J. Narváez-Morales, J. Muñoz-Saldaña, R. Venkatesan, S. Velumani, I. Lynch, A. O'Connell, K. Dawson, S. Anguissol, Biointeraction And *In Vitro* Toxicity Of Different Functionalized Bismuth Nanoparticles In Target Cells Symposium : 1a. Low Dimensional Bismuth-Based Materials, (Poster S1A-P029), XXI International Materials Research Congress, , IMRC-2012, Aug 12-17, Cancún, México.
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