

**1. Name of the Nominee** : M. ESWARAMOORTHY

**2. Date of Birth** : June 05, 1967

**3. Designation** : Professor

**4. Address:** Chemistry and Physics of Materials Unit (CPMU), JNCASR, Jakkur,  
Bangalore 560 064 ; Email: [eswar@jncasr.ac.in](mailto:eswar@jncasr.ac.in); Phone: 080-22082870

**5. Academic qualifications (in the form of a table from Bachelor's degree onwards including particulars such as subject, class/division, names of institutions, year, rank/prizes, etc.)**

Sl No	Degree	Subject	Class	Year	University
1	B.Sc.	Chemistry	1st	1987	Bharathidasan University, Trichy
2	M.Sc.	Applied Chemistry	1st	1989	Coll. of Engg. Guindy, Anna Univ., Chennai
3	Ph.D.	Chemistry		1996	Anna University Chennai
4	Post Doc.	Chemistry		1996-1999	JNCASR, Bangalore
5	STA Fellow	Chemistry		1999-2001	AIST, Tsukuba, Japan
6	Post Doc.	Chemistry		2001-2003	Bristol University, UK
7	AIST Fellow	Chemistry		2003-2004	AIST, Tohoku, Sendai, Japan

**6. Positions held (In chronological order):**

**Professor**

Chemistry and Physics of Materials Unit

Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore

Since May 2016

**Associate Professor**

Chemistry and Physics of Materials Unit

Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore

Since May 2010

**Faculty Fellow**

Chemistry and Physics of Materials Unit

Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore

Oct. 2004 - April 2010

**Visiting Scholar**

Northwestern University, USA (June 2010- Aug. 2010, Under IUSSTF Programme)

AIST Fellow

Membrane laboratory, Tohoku National Institute, Japan.

Host researchers: Prof. Fujio Mizukami, Director, Research Center for Compact

Chemical Process and Dr. S. Niwa

March 2003 - October 2004

Post Doctoral Fellow

Department of Inorganic and Materials Chemistry, Bristol University

Host researcher: Prof. Stephen Mann F.R.S.

Feb. 2001- January 2003

Science and Technology Agency Fellow

National Institute of Materials and Chemical Research, Tsukuba, Japan.

Host researchers: Prof. Fujio Mizukami and Dr. S. Niwa

March 1999-January 2001

Post Doctoral Fellow

Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore

Host researcher: Prof. C.N.R. Rao F.R.S

Dec 1996 –Feb.1999 .

## 7. Current area of Research (Not more than 200 words):

Porous Materials; Catalysis; Electrocatalysis; Clay- MOF hybrids

## 8. (a) List of Research articles in indexed journals:

#corresponding author(s)

85. Piyush Chaturbedy, Momin Ahmed and M. Eswaramoorthy#, Oxidative Dehydrogenation of Propane over a High Surface Area Boron Nitride Catalyst: Exceptional Selectivity for Olefins at High Conversion, *ACS Omega*, 3, 1, 369-374 (2017)

84. Chakraborty A, Laha S, Karnali K, Narayana C, **Eswaramoorthy M**, Maji TK, In Situ Growth of Self-Assembled ZIF-8-Aminoclay Nanocomposites with Enhanced Surface Area and CO<sub>2</sub> Uptake, *Inorganic Chemistry*, 56, 9426-9435 (2017).

83. Subhra Gope, Dheeraj Kumar Singh, **Eswaramoorthy M** and Bhattacharyya A.J, An Extremely High Surface Area Mesoporous-Microporous-Networked Pillared Carbon for High Stability Li-S and Intermediate Temperature Na-S Batteries, *Chemistry Select*, 2, 9249-9255 (2017).

82. Dheeraj Kumar Singh, RN Jenjeti , S Sampath and **M Eswaramoorthy#** , Two in one: N-doped tubular carbon nanostructure as an efficient metal-free dual electrocatalyst for hydrogen evolution and oxygen reduction reactions, *J. Mater. Chem.A*, 5, 6025 - 6031 (2017).

81. A Chakraborty , S Roy , **M Eswaramoorthy** and T. K Maji , Flexible MOF-aminoclay nanocomposites showing tunable stepwise/gated sorption for C<sub>2</sub>H<sub>2</sub>, CO<sub>2</sub> and separation for CO<sub>2</sub>/N<sub>2</sub> and CO<sub>2</sub>/CH<sub>4</sub>, *J. Mater. Chem.A*, 5, 8423 - 8430 (2017).

80 K. P Sonu , B.V.V.S Pavan Kumar , Subi J George# and **M Eswaramoorthy#** , Simple and Facile Approach To Create Charge Reversible Pores via Hydrophobic Anchoring of Ionic Amphiphiles, *ACS Applied Materials & Interfaces*, 9, 9136 - 9142 (2017).

79. A. Achari, S. Sahana and **M. Eswaramoorthy#**, High performance MoS<sub>2</sub> membranes: effects of thermally driven phase transition on CO<sub>2</sub> separation efficiency, *Energy & Environmental Science*, 9, 1224 - 1228 (2016).

78. A. Chakraborty, A. Achari, **M. Eswaramoorthy** and T. K. Maji, MOF-aminoclay composites for superior CO<sub>2</sub> capture, separation and enhanced catalytic activity in chemical fixation of CO<sub>2</sub>, **Chem. Commun.**, 11378 (2016).
77. B. Narayanamoorthy, S. Balaji, S. Pasupathi, **M. Eswaramoorthy** and II-Shik Moon, Enhanced Intrinsic Activity and Stability of Au–Rh Bimetallic Nanostructures as a Supportless Cathode Electrocatalyst for Oxygen Reduction in Alkaline Fuel Cells, **ACS Sustainable Chemistry & Engineering**, 4, 6480 - 6490 (2016).
76. Rawat N, Sandhya, Subaharan K, **Eswaramoorthy M** and Kaul G, Comparative *in vivo* toxicity assessment places multiwalled carbon nanotubes at a higher level than mesoporous silica nanoparticles, **Toxicology and Industrial Health**, 33, 182-192 (2016).
75. A. Achari and **M. Eswaramoorthy**<sup>#</sup>, Casting molecular channels through domain formation: high performance graphene oxide membranes for H<sub>2</sub>/CO<sub>2</sub> separation , **J. Mater. Chem.A**, 4, 7560 - 7564 (2016).
74. “Nickel-Palladium Bimetallic Catalysts for the Direct Synthesis of H<sub>2</sub>O<sub>2</sub> - Unusual Enhancement of Pd Activity in Presence of Nickel”, Sisir Maity and **M. Eswaramoorthy**<sup>#</sup>, **J. Mater. Chem. A**, 4, 3233-3237 (2016), DOI: 10.1039/C6TA00486E.
73. “Light Induced in-situ post-modification of clay-chromophore hybrids for multiple white light emissions”, A. Jain, A. Achari, **M. Eswaramoorthy**<sup>#</sup> and Subi J. George<sup>#</sup>, **J. Mater. Chem. C**, (2016); DOI: 10.1039/c5tc03319e
72. “No More HF: Teflon Assisted Ultrafast Removal of Silica to Generate High Surface Area Mesostructured Carbon for Enhanced CO<sub>2</sub> Capture and Supercapacitor Performance”, Dheeraj Kumar Singh, SaiKrishna K, S. Harish , S. Sampath and **M. Eswaramoorthy**<sup>#</sup>, **Angew. Chem. Int. Ed.**, 55, 2032-2036 (2016). DOI: 10.1002/anie.201509054
71. “Shape-Directed Compartmentalized Delivery of a Nanoparticle-Conjugated Small-Molecule Activator of an Epigenetic Enzyme in the Brain”, Piyush Chaturbedy, Manoj Kumar, K. Salikolimi, Sadhan Das, H. S. Sarmistha , S. Chatterjee, B. S. Suma, Tapas K Kundu<sup>#</sup> and **M. Eswaramoorthy**<sup>#</sup>, **Journal of Controlled Release**, 217, 151 - 159 (2015).
70. “Shining the Light on Clay-Chromophore Hybrids: Layered Templates for

Accelerated Ring Closure Photo-Oxidation”, A. Jain, A. Achari, N. Mothi, **M. Eswaramoorthy**<sup>#</sup> and S. J. George<sup>#</sup>, **Chemical Science** 6, 6334-6340 (2015).

69. “Reversible control of pore size and surface chemistry of mesoporous silica through dynamic covalent chemistry: philicity mediated catalysis”, Dheeraj Kumar Singh, B.V.V.S Pavan Kumar and **M. Eswaramoorthy**<sup>#</sup>, **Nanoscale**, 7, 13358 - 13362 (2015).

68. K. Jayaramulu, K. K. R. Datta, Konda Shiva, A. J. Bhattacharyya, M. Eswaramoorthy and T. K. Maji<sup>#</sup>, Controlled synthesis of tuneable nanoporous carbons for gas storage and supercapacitor application. **Microporous and Mesoporous Materials**, 206, 127-135 (2015).

67. B. Narayanamoorthy , K. K. R. Datta, M. Eswaramoorthy and S. Balaji<sup>#</sup>, Highly Active and Stable Pt3Rh Nanoclusters as Supportless Electrocatalyst for Methanol Oxidation in Direct Methanol Fuel Cells , **ACS Catalysis**, 4, 3621 - 3629 (2014).

66. B. V. V. S. Pavan Kumar, K. Venkata Rao, S. Sampath, S. J. George<sup>#</sup> and **M. Eswaramoorthy**<sup>#</sup>, Supramolecular Gating of Ion Transport in Nanochannels, **Angew. Chem. Int. Ed.**, 126, 13289-13293 (2014). **Selected as a Hot Paper.**

65. ”Glucose– and pH-Responsive Charge Reversal Surfaces”, B. V. V. S. Pavan Kumar, K. Salikolimi and **M. Eswaramoorthy**<sup>#</sup>, **Langmuir** 30, 4540-4544 (2014).

64. “Oxygen Reduction Reaction Catalyzed by Platinum Nanonetwork Prepared by Template Free One-Step Synthesis for Polymer Electrolyte Membrane Fuel Cells”, B. Narayanamoorthy, B.V.V.S. Pavan Kumar, M. Eswaramoorthy, and S. Balaji<sup>#</sup>, **Mater. Res. Bull.** 55, 137-145 (2014).

63. “Adaptive Pores: Charge Transfer Modules as Supramolecular Handles for Reversible Pore Engineering of Mesoporous Silica” B. V. V. S. Pavan Kumar, K. V. Rao, T. Soumya, S. J. George<sup>#</sup> and **M. Eswaramoorthy**<sup>#</sup>, **J. Am. Chem. Soc.**, 135, 10902 - 10905 (2013).

62. “Aminoclay-Supported Copper Nanoparticles for 1,3-Dipolar Cycloaddition of Azides with Alkynes via Click Chemistry”, A. Sravanth Kumar, K. K. R. Datta, T. Srinivasa Rao, K. V. Raghavan, M. Eswaramoorthy and B. V. Subba Reddy<sup>#</sup>, **J. Nanosci and Nanotech**, 13, 3136 - 3141 (2013).

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R. Neidl, B. R. Selvi, D.V Mohankrishna, B. Vedamurthy, A. Schneider, O. Bousiges, C. Mathis, J.C. Cassel, M. Eswaramoorthy, T. K. Kundu<sup>#</sup> and A. L. Boutillier<sup>#</sup>, **J. Neuro Science**, 33, 10698 - 10712 (2013).

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59. “Aminoclay: A Functional Layered Material with Multifaceted Applications” (Review), K. K. R. Datta, A. Amrit and **M. Eswaramoorthy<sup>#</sup>**, **J. Mater. Chem.A**, 1, 6707 - 6718 (2013).

58. “Shape Assisted Fabrication of Fluorescent Cages of Squarate based Metal-Organic Coordination Frameworks”, K. Jayaramulu, K. SaiKrishna, S. J. George, **M. Eswaramoorthy<sup>#</sup>** and T. K. Maji<sup>#</sup>, **Chem. Commun.**, (2013). (selected as a **hot paper** and highlighted on the cover page)

57. “Highly pure Solid-State White-Light Emission from Solution Processable Soft-Hybrids”, K. V. Rao, K. K. R. Datta, **M. Eswaramoorthy<sup>#</sup>** and S. J. George<sup>#</sup>, **Adv. Mat.**, 12, 1713 - 1718 (2013).

56. “Multifunctional Carbon Nanospheres with Magnetic and Luminescent Probes: Probable Brain Theranostic Agents”, C. Piyush, S. Chatterjee, R. B. Selvi, A. Bhat, M. V. Kavitha, V. Tiwari, A. B. Patel, T. K. Kundu, T. K. Maji<sup>#</sup> and **M. Eswaramoorthy<sup>#</sup>**, **J. Mater. Chem. B**, 1,939-945(2013).(Cover Page)

55. “Shaping Up: Spontaneous Formation of Ordered Mesoscopic Salt Bowls”, K. Sai Krishna, B. V. V. S. Pavan Kumar and **M. Eswaramoorthy<sup>#</sup>**, **RSC Advances**, 2, 5947 - 5949 (2012).

54. “ATP Driven Clathrin Dependent Entry of Carbon Nanospheres Prefer Cells with Glucose Receptors”, B. R. Selvi, S. Chatterjee, D. Jagadeesan, C. Piyush, B. S. Suma, **M. Eswaramoorthy** and T. K. Kundu<sup>#</sup>, **J. Nanobiotechnology**, (2012).

53. “Improved Oxygen Reduction Reaction Catalyzed by Pt/clay/Nafion Nanocomposite for PEM Fuel Cells” B. Narayanamoorthy, K. K. R. Datta, M. Eswaramoorthy and S. Balaji<sup>#</sup>, **ACS Applied Materials & Interfaces**, (2012).

52. “Honeycomb Porous Framework of Zn(II): Effective Host for Palladium Nanoparticles for Efficient Three Component Coupling and Selective Gas Storage”, K. Jayaramulu, K. K. R. Datta, M. V. Suresh, G. Kumari, R. Datta, C. Narayana, M. Eswaramoorthy and T. K. Maji<sup>#</sup>, **ChemPlusChem**, 77, 743 - 747 (2012).

51. "Pd-aminoclay nanocomposite as an efficient recyclable catalyst for hydrogenation and Suzuki cross coupling reactions", A. Sravanth Kumar, K. K. R. Datta, T. Srinivasa Rao, K. V. Raghavan, M. Eswaramoorthy and B. V. Subba Reddy<sup>#</sup>, **J. Nanosci. Nanotechnol.**, 12, 2000 - 2007 (2012).
50. "Honey Mediated Green Synthesis of Pd Nanoparticles for Suzuki Coupling and Hydrogenation of Conjugated Olefins", S. M. Reddy, K. K. R. Datta, C. Sreelakshmi, M. Eswaramoorthy and B. V. Subba Reddy<sup>#</sup>, **Nanosci. Nanotechnol. Lett.**, 4, 420 - 425 (2012).
49. "Light-Harvesting Hybrid Assemblies" (Concept Article), K. V. Rao, K. K. R. Datta, **M. Eswaramoorthy<sup>#</sup>** and Subi J George<sup>#</sup>, **Chem. Eur. J**, 18, 2184 - 2194 (2012).
48. "Tuning the Nitrogen Content and Porosity of Nanostructured Carbon Nitride Using Aminoclay as a Reactive Template", B. V. V. S. Pavan Kumar, K. K. R. Datta and **M. Eswaramoorthy<sup>#</sup>**, **Chemistry Letters**, 40, 1154 (2011).
47. "Nanopillared Arrays of Amorphous Carbon Nitride", K. Sai Krishna, B. V. V. S. Pavan Kumar and **M. Eswaramoorthy<sup>#</sup>**, **Chem Phys Lett.**, 511, 87 - 90 (2011).
46. "Observation of Pore-switching Behaviour in Porous Layered Carbon through Mesoscale Order-Disorder Transformation", K. K. R. Datta, D. Jagadeesan, C. Kulkarni, A. Kamath, R. Datta and **M. Eswaramoorthy<sup>#</sup>**, **Angew. Chem. Int. Ed.**, 123, 4015-4019 (2011).
45. "Ferromagnetism in Thin-Walled Hollow Spheres of Non-Magnetic Inorganic Materials", Nitesh Kumar, Dinesh Jagadeesan, Premlal Pillai, Melby Chacko, M. Eswaramoorthy and A. Sundaresan<sup>#</sup>, **Chem Phys Lett.**, 504, 189 - 192 (2011).
44. "Light-Harvesting Hybrid Hydrogels: Energy Transfer Induced Amplified Fluorescence in Non-Covalently Assembled Chromophore-Organoclay Composites", K. V. Rao, K. K. R. Datta, **M. Eswaramoorthy<sup>#</sup>** and S. J. George<sup>#</sup>, **Angew. Chem. Int. Ed.**, 50, 1179-1184 (2011). *Highlighted in Nature India as 'Light trapping Hybrid Gel' (Feb 2011).*  
<http://www.nature.com/nindia/2011/110228/full/nindia.2011.30.html>
43. "pH sensitive breathing of clay within the polyelectrolyte matrix", C. Piyush, J. Dinesh and **M. Eswaramoorthy<sup>#</sup>**, **ACS Nano**, 4, 5921-5929 (2010).
42. "Mixing does the magic: A rapid synthesis of high surface area noble metal nanosponges showing broadband nonlinear optical response", K. SaiKrishna, C. S.

S. Sandeep, Reji Philip and **M. Eswaramoorthy**<sup>#</sup>, **ACS Nano**, 4, 2681 - 2688 (2010).

41. “ZnO: A versatile template to obtain unusual morphologies of silica, gold and carbon nanostructures”, K. Saikrishna, G. Vivekanadan, D. Ravinder and **M. Eswaramoorthy**<sup>#</sup>, **Chem. Commun.**, 46, 2989 - 2991 (2010).

40. “Aminoclay: A Permselective Matrix to Stabilize Copper Nanoparticles”, K. K. R. Datta, C. Kulkarni and **M. Eswaramoorthy**<sup>#</sup>, **Chem. Commun.**, 46, 616 - 618 (2010).

39. “Functionalized Carbon Nanomaterials Derived from Carbohydrates” (**focus review**), J. Dinesh and **M. Eswaramoorthy**<sup>#</sup>, **Chemistry-An Asian Journal**, 5, 232 - 243 (2010).

38. “Synthesis, structure and properties of mesoporous B/C/N microspheres”, K. Raidongia, K. P. S. S. Hembram, U. V. Waghmare, M. Eswaramoorthy and C. N. R. Rao<sup>#</sup>, **ZAAC**, 636, 30 - 35 (2010).

37. “Investigations of the conversion of inorganic carbonates to methane”, J. Dinesh, M. Eswaramoorthy and C. N. R. Rao<sup>#</sup>, **ChemSusChem.**, 2, 878 (2009).

36. “Aminoclay: A designer filler for the synthesis of highly ductile polymer-nanocomposite film”, G. Johnsy, K. K. R. Datta, S. Vallayil, S. Shanmugam, B. Amarinder and **M. Eswaramoorthy**<sup>#</sup>, **ACS Applied Materials & Interfaces**, 1, 2796 - 2803 (2009).

35. “Synthesis of agarose-metal/semiconductor nanoparticles having superior bacteriocidal activity and their simple conversion to metal-carbon composites”, K. K. R. Datta, B. Srinivasan, H. Balaram and **M. Eswaramoorthy**<sup>#</sup>, **J. Chem. Sci.**, 120, 1 - 8 (2008).

34. “Construction of bi-functional inorganic-organic hybrid nanocomposites”, Suchetan Pal, Dinesh Jagadeesan, K. L. Gurunatha, M. Eswaramoorthy and T. K. Maji<sup>#</sup>, **J. Mater. Chem.**, 18, 5448 - 5451 (2008).

33. “Template-free formation of meso-structured anatase TiO<sub>2</sub> with spherical morphology”, P. Raveendran<sup>#</sup>, **M. Eswaramoorthy**<sup>#</sup>, U. Bindu, M. Chatterjee, Y. Hakuta, H. Kawanami and F. Mizukami, **J. Phys. Chem. C**, 112, 20007 - 20011 (2008).



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28. “Synthesis and characterization of metal oxide nanorod brushes”, K. Raidongia and **M. Eswaramoorthy**<sup>#</sup>, *Bull. Mater. Sci.*, 31, 87 - 92 (2008).
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26. “Form Emerges from Formless Entities: Temperature-Induced Self-Assembly and Growth of ZnO Nanoparticles into Zeptoliter Bowls and Troughs”, K. Sai Krishna, U. Mansoori, N. R. Selvi and **M. Eswaramoorthy**<sup>#</sup>, *Angew. Chem. Int. Ed.*, 46, 5962 - 5965 (2007).
25. “Macroporous silver monoliths using a simple surfactant”, F. Khan, M. Eswaramoorthy and C. N. R. Rao<sup>#</sup>, *Solid State Sciences*, 9, 27 - 31 (2007).
24. “Water-solubilized aminoclay-metal nanoparticle composites and their novel properties”, K. K. R. Datta, M. Eswaramoorthy and C. N. R. Rao<sup>#</sup>, *J. Mater. Chem.*, 17, 613 - 615 (2007).

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20. “One-Step Synthesis and Solvent-Induced Exfoliation of Hybrid Organic-Inorganic Phyllosilicate-Like Materials.”, B. Lebeau, J. Brendle, C. Marichal, A. J. Patil, M. Eswaramoorthy and S. Mann<sup>#</sup>, *J. Nanosci and Nanotech*, 6, 352 - 359 (2006).
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16. “Morphogenesis of Organoclay Microspheres with Sponge-like or Hollow Interiors”, M. Eswaramoorthy, D. Walsh and S. Mann<sup>#</sup>, *Adv. Mat.*, 14, 969 - 972 (2002). **(work got mention on the cover page of this issue).**
15. “A One-Step Conversion of Benzene to Phenol with a Palladium Membrane”, S. Niwa, M. Eswaramoorthy, J. Nair, A. Raj, N. Itoh, H. Shoji, T. Namba and F.

Mizukami<sup>#</sup>, *Science*, 295, 105 - 107 (2002). (*Featured in the C&EN News in Sept. 2002, January 7<sup>th</sup> issue*).

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5. "Hydrogenation of nitrobenzene over copper containing spinels", N. John

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3. "Non oxidative and oxidative dehydrogenation of ethylbenzene over Zn-Fe-Cr ternary spinel system", N. John Jebarathinam, M. Eswaramoorthy and V. Krishnasamy<sup>#</sup>, *Applied Catalysis A: General*, 145, 55 - 74 (1996).

2. "Effect of substitution of Fe<sup>3+</sup> in CuCr<sub>2</sub>O<sub>4</sub> matrix for the hydrogenation of nitrobenzene", N. John Jebarathinam, M. Eswaramoorthy and V. Krishnasamy<sup>#</sup>, *Reaction Kinetics and Catalysis Lett.*, 58, 291 - 298 (1996).

1. "Dehydrogenation of ethylbenzene over spinel oxides", N. John Jebarathinam, M. Eswaramoorthy and V. Krishnasamy<sup>#</sup>, *Bull. Chem.Soc. Jpn.*, 67, 1 - 5 (1994).

**(b) List of books /reviews written:**

**Reviews:**

1. K. K. R. Datta, A. Amrit and M. Eswaramoorthy, Aminoclay: A Functional Layered Material with Multifaceted Applications, *J. Mater. Chem.A*, 1, 6707 - 6718 (2013).

2. K. V. Rao, K. K. R. Datta, M. Eswaramoorthy and Subi J George, Light-Harvesting Hybrid Assemblies (Concept Article), *Chem. Eur. J*, 18, 2184 - 2194 (2012).

3. J. Dinesh and M. Eswaramoorthy, Functionalized Carbon Nanomaterials Derived from Carbohydrates, *Chemistry-An Asian Journal*, 5, 232 - 243 (2010).

**Book Chapters**

1. B. R. Selvi, S. Chatterjee, R. Modak, M. Eswaramoorthy and T. K. Kundu, A Chapter on "Histone acetylation as a therapeutic target", *Epigenetics: Development and Disease* (Springer Science), (2012).

2. J. Dinesh and M. Eswaramoorthy, A Chapter on 'Nanomaterials for therapeutic drug delivery', *CRC Handbook on Nanobiomaterials* -Taylor & Francis Publishers.(2011).

3. K. Sai Krishna and M. Eswaramoorthy, A Chapter on 'Nanorings'. *CRC Handbook of Nanophysics* - Taylor and Francis Publishers (2009).

**(c) Overseas Visit**

- Invited Speaker at the 253<sup>rd</sup> ACS National Meeting held in San Francisco, USA during the period 2-6<sup>th</sup> April 2017.
- Invited Speaker at Indo-US workshop on Nanomaterials for Energy, Discovery Park, Purdue University, USA, September 17-18, 2014.
- Invited Speaker at the International Symposium and the Workshop on Nanoscience/Nanotechnology held at the University of the West Indies, Trinidad and Tobago during the period 15-17<sup>th</sup> July 2014.
- Invited Speaker at 4<sup>th</sup> Trilateral Conference on “Nanoscience: Energy, Water & Healthcare” organized by MRS Singapore and the School of Materials Science and Engineering, NTU, Singapore, December 4-7, 2013.
- Invited Speaker at the Workshop on Advanced Materials held in Ras al Khaimah (RAK), in the UAE during the period 23-26<sup>th</sup> February 2013.
- Invited as a key note Speaker at 17<sup>th</sup> Malaysian Chemical Congress held at Kula Lumpur, Malaysia during the period 15-17 Oct. 2012.
- Invited Speaker at Cambodian Malaysian Chemical Conference held at Siem Reap, Cambodia, Malaysia during the period 19-21st Oct. 2012.
- Invited Speaker at 1<sup>st</sup> International Symposium on Advanced Nanostructured Materials for Clean Energy (ANMCE 2011), AIST- Kansai, Osaka, Japan, March 8-10, 2011.
- Invitee to attend as a member of ICPC-Nanonet Consortium (European Union) meeting held in St. Petersburg, Russia during the period 24-26<sup>th</sup> May 2011.
- Visiting Scholar (two months) at McCormick School of Engineering, Northwestern University, USA June 2010- Aug. 2010.
- As an Invitee to attend as a member of ICPC-Nanonet Consortium (European Union) meeting held in Beijing, China during the period 14-15 June 2010.
- Invited Speaker at ICS-UNIDO Conference on Advanced Diagnostics and Drug delivery at the Nanoscale , Trieste, Italy, October 13-15, 2009.

- Invited Speaker at MESA+ University of Twente - ICMS joint Symposium, Twente, Netherlands, April 26- 29, 2009.
- As an Invitee/Speaker to attend as a member of ICPC-Nanonet Consortium (European Union) annual meeting held in Prague, Czech Republic during the period 31 May 2009 to 1st April 2009.
- Invited Speaker at Taiwan-India Conference on Nanomaterials at Lunghwa University of Science and Technology, Taiwan during the period December 10-11, 2006.

**(d) Awards won (give full particulars such as title, awarding agency / organization, the achievements for which award was conferred etc.):**

1. MRSI Medal 2011, Materials Research Society of India
2. CRSI Bronze Medal-2015, Chemical Research Society of India
3. C. N. R. Rao National Prize for Chemical Research- 2018