


Name	Dr. J. MADHAVAN	
Designation	Assistant Professor	
Mailing Address	Department of Chemistry Thiruvalluvar University Vellore-632 115. Tamil Nadu, INDIA.	
Academic Qualifications	M.Sc., B.Ed., Ph.D.	
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Teaching Experience:

1. Working as a Assistant professor in the Department of Chemistry, Thiruvalluvar University, Vellore since March 2011. Teaching PG and M.Phil students.
2. Worked as a Guest Lecturer in the Department of Chemistry, Dr. Ambedkar Govt. Arts College, Chennai, during September 1999 to December 1999. Taught Industrial chemistry for final year B.Sc students and also handled Allied Chemistry for B.Sc students.

Research Experience:

Mar 2011-still	Assistant professor, Department of Chemistry, Thiruvalluvar University, Vellore.
Feb 2008-Jul 2010	Postdoctoral Research Fellow, School of Chemistry, University of Melbourne, Australia.
Aug 2007-Feb 2008	Research Associate, Dept. of Energy, University of Madras.
May 2005-Aug 2007	CSIR-Senior Research Fellow, Dept. of Energy, University of Madras.
Mar 2005-Apr 2005	Project Fellow (UGC-MRP), Dept. of Energy, University of Madras.
July 2002-Feb 2005	University Research Fellow, Dept. of Energy, University of Madras.
2001-June 2002	Research Fellow, Dept. of Energy, University of Madras.

Research Area/Specialization(s):

- Nanomaterials for dye sensitized solar cells (DSSC), Hydrogen Evolution Reactions (HER) and bio/chemical sensor applicaitons
- Polymer electrolytes for dye sensitized solar cells.
- Degradation of aqueous organic pollutants using heterogeneous photocatalysts, Fenton, photo-Fenton reactions and modified photo-Fenton reagents for advanced oxidative treatment of organic pollutants.
- Sonophotocatalytic degradation of aqueous organic pollutants such as dyes, drugs, pesticides, etc.

Research Guidance/Supervision:

Programmes of Study	Completed	On Going
Ph.D	-	5
M.Phil	7	3
M.Sc	5	-

Research Papers:

Published in International Journals	Published in National Journals	Presented in International Conferences	Presented in National Conferences
49	1	16	28

Funded Research Projects (Completed): 02

S. No	Agency	Period		Project Title	Budget (Rs. Lakhs)
		From	To		
1.	DST-SERB Fast track proposal for Young Scientists.	10.09.2012	09.09.2015	Solid-state dye sensitized solar cells: Fabrication, characterization and photoelectrochemical studies of nanocrystalline dye sensitized solar cells using polymer electrolytes.	25.55
2.	DAE-BRNS project	09.05.2013	31.03.2016	Solar energy conversion into electricity using blended polymer electrolytes for nanocrystalline dye-sensitized solar cells.	20.12

Funded Research Projects (Ongoing): 01

S. No	Agency	Period		Project Title	Budget (Rs. Lakhs)
		From	To		
1.	DBT-MST project	12.12.2014	11.12.2017	Biological synthesis and development of nano gold PTP1B inhibitors	56.40

Consultancy Projects : Nil

Number of Seminars/Conferences/Workshops/Events attended : 44

Number of Seminars/Conferences/Workshops/Events organized : 03

Number of Invited/Special Lectures delivered : 03

Number of Books/Chapters/Monographs/Manuals written : 02

Achievements/Awards/Honors:

1. DST-Young Scientist award. (Registration No: CS 154-2011 dated December 27, 2011).
2. CSIR, India (Senior Research Fellowship), May 2005.

Membership Professional/National/International Bodies

1. Associate Member, Centre for Ionics University of Malaya (CIUM), University of Malaya, Kulalumpur 50603, Malaysia.

Additional Responsibilities:

1. Academic council member, Thiruvalluvar University, Vellore.
2. Member in patent cell in Thiruvalluvar University, Vellore.
3. Member of Broad of Studies in Chemistry for Department of Chemistry, Thiruvalluvar University, Vellore
4. Member in Entrepreneurship development cell in Thiruvalluvar University, Vellore.
5. Member of Solar Cell Committee in Thiruvalluvar University, Vellore.
6. Member of Rural Society for the Advancement of Chemistry (RUSAC).

Countries Visited:

1. **Sri Lanka** for participating “Asian conference on Solar Energy Materials and Solar Cells” Kandy, Sri Lanka, during 12-16June2006.
2. **Australia** for working as“Postdoctoral Research Fellow” at School of Chemistry, University of Melbourne, Australia, during 04.02.2008 to 30.07.2010.
3. **Malaysia** for delivering an invited lecture at the “5th International Conference on Functional Materials and Devices 2015 (ICFMD 2015), Centre for Ionics University Malaya, Department of Physics, University of Malaya, Kulalumpur 50603, Malaysia during 4-6th August 2015.

Patents:

1. Maruthamuthu P, Muthuraaman B, Ganesan S, Anandan S, Murugesan S, **Madhavan J**, Austin Suthanthiraraj S. “*An improved solid-state polymer composition, a process for its preparation and an improved dye-sensitized solar cell*” Patent No. 266300 (2728/CHE/2007) dated 22.01.2007 Granted on dated 23.04.2015.

Products Developed : Nil

Publications in Journals:

1. Vadivel S, Naveen AN, Theerthagiri J, **Madhavan J**, Santhoshini Priya T, Balasubramanian N (2016) Solvothermal synthesis of BiPO₄ nanorods/MWCNT (1d-1D) composite for photocatalyst and supercapacitor applications. *Ceramics International* DOI:10.1016/j.ceramint.2016.05.080 [Elsevier] (Impact Factor: 2.605).
2. Praveen Kumar D, Lakshmana Reddy N, Karthik M, Neppolian B, **Madhavan J**, Shankar MV (2016) Solar light sensitized p-Ag₂O/n-TiO₂ nanotubes heterojunction photocatalysts for enhanced hydrogen production in aqueous-glycerol solution. *Sol. Energ. Mat. Sol. Cells* 154:78–87 [Elsevier] (Impact Factor: 5.337).
3. Senthil RA, Theerthagiri J, **Madhavan J***, Arof AK (2016) Dye-sensitized solar cell using 4-chloro-7-nitrobenzofurazan incorporated polyvinyl alcohol polymer electrolyte. *Indian Journal of Physics* DOI:10.1007/s12648-016-0869-y [Springer] (Impact Factor: 1.377).
4. Shrikant SM, Shantilal SM, Gopal A, Man S, Theerthagiri J, **Madhavan J** (2016) Functionalized grapheme oxide: An advanced material for the photocatalytic application, *International Journal of Photochemistry*, 2:2016 [chemical.journalspub.info] (Impact Factor: Nil).
5. Theerthagiri J, Senthil RA, Buraidah MH, Raghavender M, **Madhavan* J**, Arof AK (2016) Synthesis and characterization of (Ni_{1-x}Co_x)Se₂ based ternary selenides as electrocatalyst for triiodide reduction in dye-sensitized solar cells. *J. Solid State Chem.* 238:113–120 [Elsevier] (Impact Factor: 2.133).
6. Theerthagiri J, Senthil RA, Buraidah MH, **Madhavan J***, Arof AK (2016) Synthesis of nanocrystalline α -Mo₂C from hydrothermally obtained α -MoO₃ nanowires and its electrocatalytic effect on counter electrode in dye-sensitized solar cells. *J. Mater. Sci. Technol.* DOI: 10.1016/j.jmst.2016.03.003 [Elsevier] (Impact Factor: 1.909).
7. Senthil RA, Theerthagiri J, **Madhavan J*** (2016) Efficient dye sensitized solar cell with 2-mercaptobenzothiazole doped polyvinylidene fluoride-co-hexafluoropropylene polymer electrolyte. *Ionics* DOI: 10.1007/s11581-016-1642-02 [Springer] (Impact Factor: 1.754).
8. Senthil RA, Theerthagiri J, **Madhavan J***, Arof AK (2016) High performance dye-sensitized solar cell based on 2-mercaptobenzimidazole doped poly(vinylidene fluoride-co-hexafluoropropylene) based polymer electrolyte. *J. Macromol. Sci. Pure Appl. Chem.* 53:245-251 [Taylor and Francis] (Impact Factor: 0.809).
9. Senthil RA, Theerthagiri J, **Madhavan J*** (2016) Organic dopant added polyvinylidene fluoride based solid polymer electrolytes for dye sensitized solar cells. *J. Phys. Chem. Solids* 89:78–83 [Elsevier] (Impact Factor: 1.853).
10. Theerthagiri J, Senthil RA, Buraidah MH, **Madhavan J***, Arof AK (2016) Synthesis of W, Nb, Ta and Ti doped α -Mo₂C and their application as counter electrode in dye-sensitized solar cells. *Materials Today proceeding* 3:S65–S72. [Elsevier] (Impact Factor: Nil) (Scopus Cited).

11. Vadivel S, Theerthagiri J, **Madhavan J**, Natesan B (2016) Enhanced photocatalytic activity of degradation of Azo, Phenolic and Triphenyl methane dyes using novel octagon shaped BiOCl discs/MWCNT composite, *Journal of Water Process Engineering* 10:165–171 [Elsevier] (Impact Factor: Nil) Scopus Cited.
12. Senthil RA, Theerthagiri J, **Madhavan J***, Arof AK (2016) Influence of pyrazole addition on the polyvinylidene fluoride solid polymer electrolytes for dye sensitized solar cells, *Ionics* 22:425–433 [Springer] (Impact Factor: 1.754).
13. Susmitha K, Mamatha Kumari M, Naresh Kumar M, Giribabu L, Theerthagiri J, **Madhavan J**, Raghavender M (2016) Carbon nanohorns functionalized PEDOT:PSS nanocomposites for dye sensitized solar cell applications. *J. Mater. Sci: Mater. Electron.* 27:4050-4056 [Springer] (Impact Factor: 1.569).
14. Amarsingh Bhabu K, Theerthagiri J, **Madhavan J**, Balu T, Muralidharan G, Rajasekaran TR (2016) Cubic fluorite phase of samarium doped cerium oxide $(\text{CeO}_2)_{0.96}\text{Sm}_{0.04}$ for solid oxide fuel cell electrolyte. *J. Mater. Sci. Mater. Electron.* 27:1566-1573 [Springer] (Impact Factor: 1.569).
15. Yusof NSM, Babgi B, Alghamdi Y, Aksu M, **Madhavan J**, Ashokkumar M (2016) Physical and Chemical Effects of Acoustic Cavitation in Ultrasonic Cleaning Applications. *Ultrason. Sonochem.* 29:568–576 [Elsevier] (Impact Factor: 4.321).
16. Theerthagiri J, Senthil RA, **Madhavan* J**, Maiyalagan T (2016) Rice husk ash/PEDOT:PSS composite film as a low cost counter electrode for dye-sensitized solar cells, *Materials Focus* (Accepted) [ASP] (Impact Factor: Nil) Scopus Cited.
17. Theerthagiri J, Senthil RA, Malathi A, Selvi A, **Madhavan J***, Ashokkumar M (2015) Synthesis and characterization of CuS-WO_3 composite photocatalyst for enhanced visible light photocatalytic activity. *RSC Adv.*, 5:52718-52725 [RSC] (Impact Factor: 3.84).
18. Theerthagiri J, Senthil RA, Buraidah MH, **Madhavan J***, Arof AK (2015) Effect of tetrabutylammonium iodide content on PVDF-PMMA polymer blend electrolytes for dye-sensitized solar cells. *Ionics* 21:2889-2896 [Springer] (Impact Factor: 1.754).
19. Theerthagiri J, Senthil RA, Buraidah MH, **Madhavan J***, Arof A.K (2015) Studies of solvent effect on the conductivity of 2-mercaptopyridine doped solid polymer blend electrolytes and its application in dye-sensitized solar cells. *J. Appl. Polym. Sci.* 132:42489. [Wiley Online Library] (Impact Factor: 1.64).
20. Theerthagiri J, Senthil RA, **Madhavan J***, Maiyalagan T (2015) Review on recent progress in non platinum counter electrode materials for Dye-sensitized solar cells. *chemelectrochem* 2:928–945 [Wiley Online Library] (Impact Factor: Nil).
21. Michael RJV, Theerthagiri J, **Madhavan J**, Umapaty MJ, Mantoharan PT (2015) Cu_2S -incorporated ZnS nanocomposites for photocatalytic hydrogen evolution. *RSC Adv.*, 5:30175-30186 [RSC] (Impact Factor: 3.84).

22. Theerthagiri J, Senthil RA, Priya A, **Madhavan J***, Ashokkumar. M (2015) Synthesis of visible-light active $V_2O_5/g-C_3N_4$ composite photocatalyst. *New J. Chem.* 39:1367-1374 [RSC] (Impact Factor: 3.086).
23. Theerthagiri J, Senthil RA, **Madhavan J***, Neppolian B (2015) A comparative study on the role of precursors of graphitic carbon nitrides for the photocatalytic degradation of direct red 81. *Mater. Sci Forum.* 807:101-113 [Trans Tech Publications Inc] (Impact Factor: Nil) Scopus Cited.
24. Senthil RA, Theerthagiri J, **Madhavan J***, (2015) Hematite Fe_2O_3 nanoparticles incorporated polyvinyl alcohol based polymer electrolytes for dye-sensitized solar cells, *Mater. Sci. Forum.* 832:72-83 [Trans Tech Publications Inc] (Impact Factor: Nil) Scopus Cited.
25. Theerthagiri J, Senthil RA, **Madhavan J*** (2015) Synthesis, characterization and optical properties of $Cd_xZn_{1-x}S$ nanocrystals, *Mater. Sci. Forum.* 832:158-166 (Accepted) [Trans Tech Publications Inc] (Impact Factor: Nil) Scopus Cited.
26. Theerthagiri J, Senthil RA, Susmitha K, Raghavender M, **Madhavan J*** (2015) Synthesis of efficient $Ni_{0.9}X_{0.1}Se_2$ (X= Cd, Co, Sn and Zn) based ternary selenides for dye-sensitized solar cells, *Mater. Sci. Forum.* 832:61-71 [Trans Tech Publications Inc] (Impact Factor: Nil) Scopus Cited.
27. Amarsingh Bhabu K, Dhivya Saranya J, Theerthagiri J, **Madhavan J.** Balu T. Rajasekaran TR (2015) Synthesis and characterization of zinc stannate nanomaterials by sol-gel method, *Mater. Sci. Forum.* 832:144-157 [Trans Tech Publications Inc] (Impact Factor: Nil) Scopus Cited.
28. Senthil RA, Theerthagiri J, **Madhavan J*** (2014) Optimization of performance characteristics of 2-mercaptopyridine doped polyvinylidene fluoride (PVDF) polymer electrolytes for dye sensitized solar cells. *J. Non-Cryst. Solids* 406:133-138 [Elsevier] (Impact Factor: 1.766).
29. Theerthagiri J, Senthil RA, Priya A, **Madhavan J***, Michael RJV, Ashokkumar M (2014) Photocatalytic and photoelectrochemical studies of Visible-light active $\alpha-Fe_2O_3-g-C_3N_4$ nanocomposites. *RSC Advances* 4:38222-38229 [RSC] (Impact Factor: 3.84).
30. **Madhavan J***, Grieser F, Ashokkumar M (2013) Sonophotocatalytic degradation of paracetamol using TiO_2 and Fe^{3+} . *Separ. Purif. Technol.* 103:114-118 [Elsevier] (Impact Factor: 3.091).
31. **Madhavan J**, Sathish Kumar P, Anandan S, Grieser F, Ashokkumar M (2010) Degradation of acid red 88 by the combination of sonolysis and photocatalysis. *Separ. Purif. Technol.* 74:336-341 [Elsevier] (Impact Factor: 3.091).
32. **Madhavan J**, Grieser F, Ashokkumar M (2010) Sonophotocatalytic degradation of Formetanate hydrochloride using homogeneous and heterogenous photocatalysts. *Separ. Purif. Technol.* 73:409-414 [Elsevier] (Impact Factor: 3.091).

33. **Madhavan J**, Sathish Kumar P, Grieser F, Ashokkumar M, Anandan S (2010) Sonophotocatalytic degradation of diclofenac using doped and undoped semiconductor nanoparticles. *Chemosphere* 80:747-752 [Elsevier] (Impact Factor: 3.340).
34. **Madhavan J**, Sathis Kumar P, Grieser F, Ashokkumar M, Anandan S (2010) Sonophotocatalytic degradation of monocrotophos using TiO₂ and Fe³⁺. *J. Hazard. Mater.* 177:944–949 [Elsevier] (Impact Factor: 4.529).
35. **Madhavan J**, Greiser F, Ashokkumar M (2010) Combined Advanced Oxidation Processes for the Synergistic Degradation of Ibuprofen in Aqueous Environment. *J. Hazard. Mater.* 178:202–208 [Elsevier] (Impact Factor: 4.529).
36. **Madhavan J**, Greiser F, Ashokkumar M (2010) Degradation of Orange G by advanced oxidation processes. *Ultrason. sonochem.* 17:338-343 [Elsevier] (Impact Factor: 4.321).
37. **Madhavan J**, Maruthamuthu P, Ashokkumar M, Murugesan S (2009) Kinetics of degradation of acid red 88 in presence of Co²⁺-ion/peroxomonosulfate reagent. *Appl. Catal. A: General.* 368:35-39 [Elsevier] (Impact Factor: 3.942).
38. **Madhavan J**, Greiser F, Ashokkumar M (2009) Degradation of Orange G by sonophoto Fenton process. *Water Science and Technology* 60:2195-2202 [IWAOnline] (Impact Factor: 1.212).
39. **Madhavan J**, Maruthamuthu P, Murugesan S, Anandan S (2008) Kinetic studies on visible light assisted degradation of acid red 88 in presence of metal ion coupled oxone reagent. *Appl. Catal. B Environ.* 83:8-14 [Elsevier] (Impact Factor: 7.435).
40. **Madhavan J**, Murugesan S, Maruthamuthu P, Anandan S, (2008) Advanced Oxidation Process-Photocatalyzed degradation of a textile dye using titanium dioxide” *Environmental Science–An Indian Journal* 3:80-83 [TSI Journals] (Impact Factor: Nil).
41. Sathish Kumar P, Sivakumar R, Anandan S, **Madhavan J**, Maruthamuthu P, Ashokkumar M (2008) Photocatalytic degradation of Acid Red 88 using Au-TiO₂ nanoparticles in aqueous solutions. *Water Research* 42:4878-4884 [Elsevier] (Impact Factor: 5.528).
42. Muthuraaman B, Murugesan S, Mathew V, Ganesan S, Joseph Paul B, **Madhavan J**, Maruthamuthu P, Austin Suthanthiraraj S (2008) An Investigation on the Performance of a Silver Ionic Solid Electrolyte System for a New Detergent-based Nanocrystalline Dye-sensitized solar cell. *Sol. Energ. Mat. Sol. Cells* 92:1712-1717 [Elsevier] (Impact Factor: 5.337).
43. Ganesan S, Muthuraaman B, **Madhavan J**, Mathew V, Maruthamuthu P, Suthanthiraraj SA (2008) The use of 2, 6-bis (N-pyrazolyl) pyridine as an efficient dopant in conjugation poly (ethylene oxide) for nanocrystalline dye-sensitized solar cells. *Electrochim. Acta* 53:7903-7907 [Elsevier] (Impact Factor: 4.504).

44. Ganesan S, Muthuraaman B, Mathew V, **Madhavan J**, Maruthamuthu P, Suthanthiraraj SA (2008) Performance of a new polymer electrolyte incorporated with diphenylamine in nanocrystalline dye-sensitized solar cell. *Sol. Energ. Mat. Sol. Cells* 92:1718-1722 [Elsevier] (Impact Factor: 5.337).
45. Dhanalakshmi KB, Anandan S, **Madhavan J**, Maruthamuthu P (2008) Photocatalytic degradation of phenol over TiO₂ powder: The influence of peroxomonosulphate and peroxodisulphate on the reaction rate. *Sol. Energ. Mat. Sol. Cells* 92:457-463 [Elsevier] (Impact Factor: 5.337).
46. Anandan S, Sathish Kumar P, Pugazhenthiran N, **Madhavan J**, Maruthamuthu P(2008) Effect of loaded silver nanoparticles on TiO₂ for photocatalytic degradation of textile dye (Acid Red 88). *Sol. Energ. Mat. Sol. Cells* 92:929-937 [Elsevier] (Impact Factor: 5.337).
47. Latha S, **Madhavan J**, Muthuraaman B, Anandan S, Chitra Devi R, Maruthamuthu P(2007) Direct Conversion of Solar radiation to electricity by fabricated solar cells using Ruthenium polypyridyl complexes", *Ceylon Journal of Science: Physical Sciences* 12:25-31 [University of Sri Lanka] (Impact Factor: Nil).
48. **Madhavan J**, Muthuraaman B, Murugesan S, Anandan S, Maruthamuthu P(2006) Peroxomonosulphate, an efficient oxidant for the photocatalysed degradation of a textile dye, acid red 88. *Sol. Energ. Mat. Sol. Cells* 90:1875-1887 [Elsevier] (Impact Factor: 5.337).
49. Anandan S, Latha S, Murugesan S, **Madhavan J**, Muthuraaman B, Maruthamuthu P(2005) Synthesis, characterization and fabrication of solar cells making use of [Ru(dcbpy)(tptz)X]X (where X = Cl⁻, SCN⁻, CN⁻). *Solar Energy* 79:440-448 [Elsevier] (Impact Factor: 3.469).
50. Anandan S, **Madhavan J**, Maruthamuthu P, Raghukumar V, Ramakrishnan VT(2004) Synthesis and characterization of Naphthyridine and acridinedione ligands coordinated Ruthenium (II) complexes and their applications in dye sensitized solar cells. *Sol. Energ. Mat. Sol. Cells* 81:419-428 [Elsevier] (Impact Factor: 5.337).

Publications in Books:

1. Anandan S, **Madhavan J**, Ashokkumar M, "The Contribution of nanotechnology to Hydrogen Production" Chapter 5, *Nanotechnology for Energy Challenge*, Garcia-Martinez (Ed.), Wiley-VCH Verlag, GmbH, (2009), pp.111-136. ISBN-978-3-527-32401-9.
2. Theerthagiri J, Senthil RA, Thirumalai D, **Madhavan J***, "Handbook of Ultrasonics and Sonochemistry" Chapter title: Sonophotocatalytic degradation of organic pollutants using nanomaterials, Springer (2016) DOI: 10.1007/978-981-287-470-2_50-12015, pp.1-34. ISBN-978-981-287-470-2.