CURRICULUM VITAE

Raman Vedarajan, PhD

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Education

Jan 2002 – Jun 2006 **Anna University, Chennai**
Master of Philosophy, Biomaterials, Surface Modification, Mophological Investigation, Electrochemistry,
Chennai, Tamil Nadu, India

Aug 2000 – Aug 2001 **Anna University, Chennai**
Master of Philosophy, Materials, Coatings, Electrochemistry
Chennai, Tamil Nadu, India

Apr 1998 – Mar 2000 **Sri Sathya Sai Institute of Higher Learning**
Master of Science, Chemistry
Puttaparthi, Andhra Pradesh, India

Apr 1995 – Mar 1998 **Sri Sathya Sai Institute of Higher Learning**
Bachelor of Science (Hon's), Chemistry
Puttaparthi, Andhra Pradesh, India

Research Experience

Aug 2017 – present **Scientist**
International Advanced Research Centre for Powder Metallurgy and New Materials, Center for Fuel Cell Technology
, India

May 2012 – Jul 2017 **Professor (Assistant)**
Japan Advanced Institute of Science and Technology, School of Materials Science
Komatsu, Japan

Apr 2010 – Apr 2012 **Scientist**
International Advanced Research Centre for Powder Metallurgy and New Materials,
Chennai, Tamil Nadu, India

Nov 2009 – Mar 2010	**PostDoc Position** Nagoya University, Graduate of Bio-Agricultural Sciences , Japan
Oct 2006 – Oct 2009	**PostDoc Position** National Institute for Materials Science, Research Center for Strategic Materials Tsukuba, Ibaraki, Japan
Apr 2004 – Mar 2006	**International Exchange Researcher** Osaka University, Department of Materials and Manufacturing Science Suita, Ōsaka, Japan

Interests & Activities

Interests Solid State Electrochemistry, Energy Materials, Organic-inorganic hybrid Materials Chemistry, Corrosion, Surface Modification, Hydrogen Generation, Electrochemistry, Inorganic Chemistry, Hydrogen Generation,

Scientific Memberships

1. American Chemical Society
2. Electrochemical Society
3. Society for Polymer Science Japan
4. Chemical Society of Japan

Book Chapters

1. Microstructure of the Rust Formed on Si-Al Bearing Ultrafine-Grained WeatheringSteel, Raman. V, Nishimura. T Microstructure and Texture in Steels, ISBN 978-1-84882-453-9. Springer London, (2009) 431
2. Atmospheric corrosion resistance of stainless steel in saline environment, Nishimura. T, Raman. V Advances in Stainless Steels, By Ra, Baldev, et al. (Eds.) (45)(2009) 647.
3. Pitchaimuthu Sudhagar, Nitish Roy, Raman Vedarajan, Anitha Devadoss, Chiaki Terashima, Kazuya Nakata, Akira Fujishima: *Hydrogen and CO2 Reduction Reactions: Mechanisms and Catalysts*. Photoelectrochemical Solar Fuel Production, 04/2016: pages 105-160; , ISBN: 978-3-319-29639-5, DOI:10.1007/978-3-319-29641-8_3

Journal Publications

1. Raman Vedarajan, Naoki Tomida, Noriyoshi Matsumi: *Metal Free Composite Electrodes for Hydrogen Evolution Reaction*. Materials today: proceedings 12/2017; 4(4):5116-5121., DOI:10.1016/j.matpr.2017.05.016

2. Rajashekar Badam, Raman Vedarajan, Noriyoshi Matsumi: *3D-polythiophene foam on a TiO2 nanotube array as a substrate for photogenerated Pt nanoparticles as an advanced catalyst for the oxygen reduction reaction*. Polymer Journal 12/2017;, DOI:10.1038/s41428-017-0005-7
3. Rajashekar Badam, Prerna Joshi, Raman Vedarajan, Rajalakshmi Natarajan, Noriyoshi Matsumi: *Few-Layered MoS2/Acetylene Black Composite as an Efficient Anode Material for Lithium-Ion Batteries*. Nanoscale Research Letters 10/2017; 12(1):555., DOI:10.1186/s11671-017-2322-3
4. Sai Gourang Patnaik, Raman Vedarajan, Noriyoshi Matsumi: *BIAN based functional diimine polymer binder for high performance Li ion batteries*. Journal of Materials Chemistry A 08/2017; 5(5)., DOI:10.1039/C7TA03843G
5. Pradeep Kumar Badiya, Sai Gourang Patnaik, Venkatesh Srinivasan, Narendra Reddy, Chelli Sai Manohar, Raman Vedarajan, Noriyoshi Mastumi, Siva Kumar Belliraj, Sai Sathish Ramamurthy: *Ag-Protein Plasmonic Architectures for Surface Plasmon-Coupled Emission Enhancements and Fabry-Perot Mode-Coupled Directional Fluorescence Emission*. Chemical Physics Letters 07/2017; 685., DOI:10.1016/j.cplett.2017.07.056
6. Raman Vedarajan, Kento Matsui, Emari Tamaru, Jyoti Dhankhar, Toshihiro Takekawa, Noriyoshi Matsumi: *Ionic liquid/boric ester binary electrolytes with unusually high lithium transference number*. Electrochemistry Communications 06/2017; 81., DOI:10.1016/j.elecom.2017.06.019
7. Ankit Singh, Raman Vedarajan, Noriyoshi Matsumi: *Modified Metal Organic Frameworks (MOFs)/Ionic Liquid Matrices for Efficient Charge Storage*. Journal of The Electrochemical Society 01/2017; 164(8):H5169-H5174., DOI:10.1149/2.0191708jes
8. Rajashekar Badam, Raman Vedarajan, Kazuki Okaya, Koichi Matsutani, Noriyoshi Matsumi: *Sacrificial Reducing Agent Free Photo-Generation of Platinum Nano Particle over Carbon/TiO 2 for Highly Efficient Oxygen Reduction Reaction OPEN*. Scientific Reports 12/2016; 6(37006)., DOI:10.1038/srep37006
9. Puhup Puneet, Raman Vedarajan, Noriyoshi Matsumi: *Alternating Poly(borosiloxane) for Solid State Ultrasensitivity Toward Fluoride Ions in Aqueous Media*. 09/2016; 1(10)., DOI:10.1021/acssensors.6b00346
10. Maidhily Manikandan, Raman Vedarajan, Rajesh Kodiyath, Hideki Abe, Shigenori Ueda, Arivuoli Dakshnamoorthy, Natarajan Rajalakshmi, Kaveripatnam S Dhathathreyan, Gubbala V Ramesh: *Pt Decorated Free-Standing TiO2 Nanotube Arrays: Highly Active and Durable Electrocatalyst for Oxygen Reduction and Methanol Oxidation Reactions*. Journal of Nanoscience and Nanotechnology 08/2016; 16(8):8269-8278., DOI:10.1166/jnn.2016.11772
11. Puhup Puneet, Raman Vedarajan, Noriyoshi Matsumi: *σ-p Conjugated Copolymers via Dehydrocoupling Polymerization of Phenylsilane and Mesitylborane*. Polymer Chemistry 05/2016; 7(25)., DOI:10.1039/C6PY00205F
12. Kamiya Jain, Raman Vedarajan, Masaki Watanabe, Mamoru Ishikiriyama, Noriyoshi Matsumi: *Tunable LCST behavior of poly(N-isopropylacrylamide/ionic liquid) copolymers*. Polymer Chemistry 10/2015; 6(38)., DOI:10.1039/C5PY00998G
13. Kumar Sai Smaran, Prerna Joshi, Raman Vedarajan, Noriyoshi Matsumi: *Optimisation of Potential Boundaries with Dynamic Electrochemical Impedance Spectroscopy for an Anodic Half-Cell Based on Organic–Inorganic Hybrid Electrolytes*. ChemElectroChem 10/2015; 2(12)., DOI:10.1002/celc.201500372
14. Toshiyasu Nishimura, Vedarajan Raman: *Epoxy polymer coating to prevent the corrosion of aluminum nanoparticles*. Polymers for Advanced Technologies 09/2015; 27(6):n/a-n/a., DOI:10.1002/pat.3694

15. Prerna Joshi, Raman Vedarajan, Noriyoshi Matsumi: *Crystalline Low Molecular Weight Cyclic Organoboron Compound for Efficient Solid State Lithium Ion Transport*. Chemical Communications 08/2015; 51(81)., DOI:10.1039/C5CC04753F
16. Rajashekar B, Raman Vedarajan, Noriyoshi Matsumi: *Platinum Decorated Functionalized Defective Acetylene Black; A Promising Cathode Material For Oxygen Reduction Reaction*. Chemical Communications 05/2015; 51(48)., DOI:10.1039/C5CC02235E
17. L Tiankhoon, N H Hassan, M Y A Rahman, R Vedarajan, N Matsumi, A Ahmad: *One-pot synthesis nano-hybrid ZrO 2 –TiO 2 fillers in 49% poly(methyl methacrylate) grafted natural rubber (MG49) based nano-composite polymer electrolyte for lithium ion battery application*. Solid State Ionics 03/2015; 276., DOI:10.1016/j.ssi.2015.03.034
18. Noriyoshi Matsumi, Yoshiyuki Toyota, Prerna Joshi, Puhup Puneet, Raman Vedarajan, Toshihiro Takekawa: *Boric Ester-Type Molten Salt via Dehydrocoupling Reaction*. International Journal of Molecular Sciences 11/2014; 15(11):21080-9., DOI:10.3390/ijms151121080
19. Raman Vedarajan, Shoto Ikeda, Noriyoshi Matsumi: *Electrochemical characterization of TiO2/WOx nanotubes for photocatalytic application*. Nanoscale Research Letters 10/2014; 9(1):573., DOI:10.1186/1556-276X-9-573
20. Raman Vedarajan, Makoto Ogawa, Noriyoshi Matsumi: *Lithium ion conductive behavior of TiO2 nanotube/ionic liquid matrices*. Nanoscale Research Letters 10/2014; 9(1):539., DOI:10.1186/1556-276X-9-539
21. Raman Vedarajan, Yasuhiro Hosono, Noriyoshi Matsumi: *Conjugated polycarbazole-boron complex as a colorimetric fluoride ion sensor*. Solid State Ionics 09/2014; 262:795-800., DOI:10.1016/j.ssi.2013.09.062
22. Toshiyasu Nishimura, Vedarajan Raman: *Corrosion Prevention of Aluminum Nanoparticles by a Polyurethane Coating*. Materials 06/2014; 7(6):4710-4722., DOI:10.3390/ma7064710
23. Kumar Sai Smaran, Raman Vedarajan, Noriyoshi Matsumi: *Design of organic-inorganic hybrid ion-gel electrolytes composed of borosilicate and allylimidazolium type ionic liquids*. International Journal of Hydrogen Energy 02/2014; 39(6):2936-2942., DOI:10.1016/j.ijhydene.2013.05.124
24. Mohana Marimuthu, Murugan Veerapandian, Subramaniyan Ramasundaram, Seok Won Hong, P. Sudhagar, Srinivasan Nagarajan, V. Raman, Eisuke Ito, Sanghyo Kim, Kyusik Yun, Yong Soo Kang: *Sodium functionalized graphene oxide coated titanium plates for improved corrosion resistance and cell viability*. Applied Surface Science 02/2014; 293:124–131., DOI:10.1016/j.apsusc.2013.12.114
25. S. Nagarajan, P. Sudhagar, V. Raman, Woohyung Cho, K. S. Dhathathreyan, Yong Soo. Kang: *A PEDOT-reinforced exfoliated graphite composite as a Pt- and TCO-free flexible counter electrode for polymer electrolyte dye-sensitized solar cells*. 01/2013; 1(4-4):1048-1054., DOI:10.1039/c2ta00091a
26. Srinivasan Nagarajan, Marimuthu Mohana, Pitchaimuthu Sudhagar, Vedarajan Raman, Toshiyasu Nishimura, Sanghyo Kim, Yong Soo Kang, Nallaiyan Rajendran: *Nanocomposite Coatings on Biomedical Grade Stainless Steel for Improved Corrosion Resistance and Biocompatibility*. ACS Applied Materials & Interfaces 09/2012; 4(10):5134-41., DOI:10.1021/am301559r
27. B. P. Vinayan, Rupali Nagar, V. Raman, N. Rajalakshmi, K. S. Dhathathreyan, S. Ramaprabhu: *Synthesis of graphene-multiwalled carbon nanotubes hybrid nanostructure by strengthened electrostatic interaction and its lithium ion battery application*. Journal of Materials Chemistry 04/2012; 22(19):9949-9956., DOI:10.1039/C2JM16294F

28. BP Vinayan, Rupali Nagar, V Raman, N Rajalakshmi, KS Dhathathreyan, S Ramaprabhu: *Synthesis of graphene-multiwalled carbon nanotubes hybrid nanostructure by strengthened electrostatic interaction and its lithium ion battery application*. Journal of Materials Chemistry 01/2012;
29. S Tamilselvi, V Raman, N Rajendran: *Surface modification of titanium by chemical and thermal methods - Electrochemical impedance spectroscopic studies*. Corrosion Engineering Science and Technology 06/2011; 46(4):585-591., DOI:10.1179/147842209X12590591256936
30. G. Mohan Kumar, V Raman, Jin Kawakita, P Ilanchezhiyan, R Jayavel: *Fabrication of polypyrrole/ZnCoO nanohybrid systems for solar cell applications*. Dalton Transactions 09/2010; 39(35):8325-30., DOI:10.1039/c0dt00167h
31. Raman Vedarajan, Toshiyasu Nishimura: *Corrosion analysis and monitoring of the environmental factors for the deterioration of chromium-bearing reinforcing steel in mortar*. Journal of Solid State Electrochemistry 08/2010; 14(8):1457-1464., DOI:10.1007/s10008-009-0949-4
32. S. Nagarajan, V. Raman, N. Rajendran: *Evaluation of passive film behaviour of super austenitic stainless steels at different potential regions using dynamic electrochemical impedance spectroscopy*. Journal of Solid State Electrochemistry 07/2010; 14(7):1197-1204., DOI:10.1007/s10008-009-0948-5
33. Seshachalam Udayakumar, Hye-Lim Shim, Vedarajan Raman, Dae-Won Park: *The complete optimization of ionic liquid-functionalized porous amorphous silica under one-pot synthesis conditions*. Microporous and Mesoporous Materials 04/2010; 129(1-2-129):149-155., DOI:10.1016/j.micromeso.2009.09.010
34. Toshiyasu Nishimura, Vedarajan Raman: *Corrosion behavior of reinforcing steel in concrete for nuclear facilities exposed in high chloride and low pH environment*. Journal of Nuclear Materials 02/2010; 397(1):101-108., DOI:10.1016/j.jnucmat.2009.12.015
35. S. Tamilselvi, V. Raman, N. Rajendran: *Evaluation of corrosion behavior of surface modified Ti–6Al–4V ELI alloy in hanks solution*. Journal of Applied Electrochemistry 02/2010; 40(2):285-293., DOI:10.1007/s10800-009-9972-5
36. S. Nagarajan, V. Raman, N. Rajendran: *Synthesis and electrochemical characterization of porous niobium oxide coated 316L SS for orthopedic applications*. Materials Chemistry and Physics 02/2010; 119(3-119):363-366., DOI:10.1016/j.matchemphys.2009.10.033
37. Seshachalam Udayakumar, Vedarajan Raman, Hye-Lim Shim, Dae-Won Park: *Cycloaddition of carbon dioxide for commercially-imperative cyclic carbonates using ionic liquid-functionalized porous amorphous silica*. Applied Catalysis A General 10/2009; 368(1-2):97-104., DOI:10.1016/j.apcata.2009.08.015
38. Shinji Fujimoto, Vedarajan Raman, Hiroaki Tsuchiya: *Surface modification of β-Type titanium alloy by electrochemical potential pulse polarization*. Journal of Physics Conference Series 06/2009; 165(1):012007., DOI:10.1088/1742-6596/165/1/012007
39. Vedarajan Raman, Toshiyasu Nishimura: *Monitoring of Environmental Factors and Corrosion Analysis of Reinforcing Steel in Mortar*. Materials transactions 04/2009; 50(4):799-805., DOI:10.2320/matertrans.MRA2008355
40. S. Tamilselvi, V. Raman, N. Rajendran: *Corrosion behavior of titanium alloys in Hanks solution*. 01/2009; 34(3):579-583., DOI:10.14723/tmrsj.34.579
41. V. Raman, T. Nishimura: *Microstructure of the Rust Formed on SiAl Bearing Ultrafine-Grained Weathering Steel*. DOI:10.1007/978-1-84882-454-6_27

42. V. Raman, S. Tamilselvi, N. Rajendran: *Evaluation of effective biocides for SRB to control microbiologically influenced corrosion*. Materials and Corrosion 04/2008; 59(4):329 - 334., DOI:10.1002/maco.200804103
43. A.P. Srikanth, V. Raman, S. Tamilselvi, S. Nanjundan, N. Rajendran: *Electropolymerization and corrosion protection of polyaniline and its copolymer on carbon steel*. Anti-Corrosion Methods and Materials 01/2008; 55(1):3-9., DOI:10.1108/00035590810842762
44. M Karthega, V Raman, N Rajendran: *Influence of potential on the electrochemical behaviour of β titanium alloys in Hank's solution*. Acta Biomaterialia 12/2007; 3(6):1019-23., DOI:10.1016/j.actbio.2007.02.009
45. V. Raman, S. Tamilselvi, N. Rajendran: *Electrochemical Impedance Spectroscopic Characterization of Titanium During Alkali Treatment and Apatite Growth in Simulated Body Fluid*. Electrochimica Acta 09/2007; 52(26):7418-7424., DOI:10.1016/j.electacta.2007.06.040
46. P. Srikanth, T.G. Sunitha, V. Raman, S. Nanjundan, N. Rajendran: *Synthesis, characterization and corrosion protection properties of poly(N-(acryloyloxymethyl) benzotriazole- co-glycidyl methacrylate) coatings on mild steel*. Materials Chemistry and Physics 06/2007; 103(2):241-247., DOI:10.1016/j.matchemphys.2007.02.021
47. S. Tamilselvi, V. Raman, N. Rajendran: *Corrosion behaviour of Ti–6Al–7Nb and Ti–6Al–4V ELI alloys in the simulated body fluid solution by electrochemical impedance spectroscopy*. Electrochimica Acta 11/2006; 52(3):839-846., DOI:10.1016/j.electacta.2006.06.018
48. V. Raman, S. Nagarajan, N. Rajendran: *Electrochemical impedance spectroscopic characterisation of passive film formed over β Ti–29Nb–13Ta–4.6Zr alloy*. Electrochemistry Communications 08/2006; 8(8):1309-1314., DOI:10.1016/j.elecom.2006.06.004
49. V. Raman, S. Tamilselvi, S. Nanjundan, N. Rajendran: *Electrochemical behaviour of titanium and titanium alloy in artificial saliva*. Trends in Biomaterials and Artificial Organs 01/2005; 18(2):137-140.
50. S. Tamil Selvi, V. Raman, N. Rajendran: *Corrosion inhibition of mild steel by benzotriazole derivatives in acidic medium*. Journal of Applied Electrochemistry 12/2003; 33(12):1175-1182., DOI:10.1023/B:JACH.0000003852.38068.3f
51. S. Gokul Lakshmi, V. Raman, N. Rajendran, M.A.K. Babi, D. Arivuoli: *In vitro corrosion behaviour of plasma nitrided Ti–6Al–7Nb orthopaedic alloy in Hanks solution*. Science and Technology of Advanced Materials 09/2003; 4(5):415–418., DOI:10.1016/j.stam.2003.09.005

Patents

7 Japanese; 1 US; 1 European patents filed.