

## CURRICULUM VITAE

**Dr. S. Vasudevan, FRSC (UK), FNESA**  
Principal Scientist & Professor (AcSIR)  
Electroinorganic Chemicals Division  
CSIR-Central Electrochemical Research Institute  
Karaikudi - 630 006  
Tamilnadu, India



Phone : (00 91 4565) 241278  
Fax : (00 91 4565) 227779  
E-mail : [vasudevan65@gmail.com](mailto:vasudevan65@gmail.com) ; [svasudevan@cecri.res.in](mailto:svasudevan@cecri.res.in)

### a. Academic record

Sl .No.	Qualification with specialization	Institution	Year	Division
1	B.Sc. (Chemistry)	Madurai Kamaraj University, Madurai	1986	First
2	M.Sc. (Industrial Chemistry – Electrochemistry)	Alagappa University Karaikudi	1988	First
3	Ph.D.(Industrial Chemistry – Electrochemistry)	Alagappa University Karaikudi	1995	Highly commended

### d. Positions held

Sl No.	Institute	Level	Years taught (yyyy to yyyy)
1	CSIR-Central Electrochemical Research Institute	Principal Scientist	Since 2010
2	CSIR-Central Electrochemical Research Institute	Senior scientist	2006-2009
3	CSIR-Central Electrochemical Research Institute	Scientist	2001-2005
4	CSIR-Central Electrochemical Research Institute	Junior Scientist	1997-2000

## **Fields of Research Interest:**

I am working in diverse areas of electrochemistry for the past 20 years. My research primarily focussed on the areas of chemical and electrochemical water treatment, electrochemical and photo-electrochemical generation of hydrogen, synthesis of electro-inorganic chemicals, electrochemical waste management, electro-catalysis, magnesium batteries.

## **Presently involved in,**

- ⇒ Treatment of drinking water containing inorganic and organic and persistent organic contaminants by electrocoagulation
- ⇒ Treatment of drinking water containing persistent organic pollutants (POPs) by advanced electrochemical oxidation (anodic oxidation, electro-Fenton) process
- ⇒ Production and reactions of the oxygenated radicals
- ⇒ Electrochemical synthesis of hypochlorite and hydrogen peroxide.
- ⇒ Electrochemical ozone generation based on PEM technology
- ⇒ Development of catalysts / membrane for Proton Exchange Membrane (PEM) based water electrolyser for hydrogen generation.
- ⇒ Development of materials for photo-electrochemical generation of hydrogen

The subject of my doctoral work was “Electrolytic Preparation of chlorates and perchlorates of alkaline earth metals”, which had not been attempted by electrolytic method in view of the precipitation of less soluble alkaline earth metal hydroxides. This problem has been obviated by suitable cell design, which prevented or minimized the precipitation of hydroxides, thereby making the electrolytic process for the preparation of alkaline earth metal chlorate and perchlorates feasible.

## **Activities and Achievements**

### **a. Awards and Honors**

#### **Awards**

16. Bharat Shiksha Ratan Award by Global Society for Health & Educational Growth (2016)
15. Outstanding Faculty of the Year Award by EET CRS 4<sup>th</sup> Faculty Branding Awards-16, Kolkata (2016)
14. Best Scientist Award by EET CRS 4<sup>th</sup> Science & Technology Award -2016, Bengaluru (2016)
13. Indira Gandhi Sadbhavana Award by International Business Council, New Delhi (2016)
12. MRSI Medal – 2016 by Materials Society of India, Bangalore, India (2016)
11. Outstanding Reviewer Award – Journal of Environmental Chemical Engineering, Elsevier (2015)
10. Outstanding Reviewer Award – Journal of Hazardous Materials,

- Elsevier (2015)
9. Excellence in Review Award – Chemical Engineering & Processing, Elsevier (2015)
  8. Distinguished Scientist Award by Vinous International Foundation, Chennai (2015)
  7. International Highest Publication Award by International Science Congress Association (2014)
  6. Excellence in Review Award – Desalination, Elsevier (2014)
  5. ISEAC Eminent Scientist Award 2013 by Indian Society for ElectroAnalytical Chemistry (2013)
  4. International Best Researcher Award by International Science Congress Association (2012)
  3. ISEAC Journal Publications Award – 2010 by Indian Society for ElectroAnalytical Chemistry (2010)
  2. Third prize for Per Capita ECF Award by – CSIR- CECRI (2004)
  1. Best Import Substitution Award for ‘Hydrogen Generator’ by All India Industrial Exhibition Society (2004)

#### **Honors**

17. PSG Distinguished Visiting Professor (2017-present)
16. Fellow – The Royal Society of Chemistry (FRSC), UK (2016)
15. Fellow – Academy of Sciences, Chennai (2017)
14. Member – PG Board of Studies in Chemistry, Pondicherry University, Puducherry (2016 – 2019)
13. Guest Research Professor, Akita University, Japan (2016 – present)
12. Visiting Professor, King Saud University, Riyadh, Saudi Arabia (2015 – present)
11. Invited Professor, University of Paris-Est Marne-La-Vallee. France (2012)
10. Member – UG Board of Studies in Department of Chemistry, Pondicherry University, Puducherry (2015 – 2018)
9. First Indian authors contributed to the WILEY’s prestigious “*ULLMANN’S Encyclopedia of Industrial Chemistry*”
8. Fellow – National Environmental Science Academy (FNESA)
7. Fellow – Society for Advancement of Electrochemical Science and Technology (FSAEST)
6. Fellow – International Congress of Chemistry and Environment (FICCE)
5. Fellow – International Science Congress Association (FISCA)
4. Post Doctoral Fellow – New Jersey Institute of Technology, Newark, US
3. Research Associate - CSIR- CECRI, Karaikudi
2. Senior Research Fellow – CSIR- CECRI, Karaikudi
1. Junior Research Fellow – CSIR- CECRI, Karaikudi

#### **b. Technology transferred**

- Electrochemical Deflouridator (6 industries)
- Electrochemical Hydrogen compressor (1 industry)

- Activated electrodes for hydrogen generation plant (1 industry)
- PEM based Hydrogen Generator ( 1 industry)

**c. Professional Associations**

Member	International Society of Electrochemistry (ISE)
Life Member	Materials Research Society of India
Life Member	Chemical Research Society of India
Life Member	Indian Carbon Society
Life Member	Indian Institute of Metals
Life Member	Indian Society for ElectroAnalytical Chemistry
Life Member	Indian Desalination Association
Fellow Member	International Congress of Chemistry and Environment
Life Member	Association of Global Groundwater Scientists
Life Member	Society of Environmental Chemistry and Allied Sciences
Life Fellow Member	International Science Congress Association
Life Fellow Member	Society for Advancement of Electrochemical Science and Technology
Life Fellow Member	National Environmental Science Academy
Life Member	Kerala Academy of Science

**d. Editorial Activities**

Associate Editor	- Environmental Chemistry Letters (Springer) ( <u>presently</u> )
Associate Editor	- Frontiers in Environmental Science ( <u>presently</u> )
Editorial Board Member	- Scientific Reports (Nature) ( <u>presently</u> )
Board Director	- Journal of Advanced Electrochemistry ( <u>presently</u> )
Editorial Board Member	- Reports in Electrochemistry ( <u>presently</u> )
Editorial Board Member	- Nanotechnology for Environmental Engineering (Springer) (presently)

Guest Editor - Graphene, Green and Sustainable Chemistry and Journal of Chemistry  
 Editorial Board Member for Research Journal of Chemical Sciences, Chemical Science Transactions, Journal of Basic & Applied Sciences, Graphene, Com. Water, Energy, Environ. Engineering, Int. Journal of Chemical Engineering Research, Int. Journal of Chemistry and Applications, Int. Journal of Chemistry and Chemical Engineering, Int. Journal of Nanotechnology and Applications, Int. Journal of Nanoscience and Nanotechnology, Int. Journal of Water Resources, Chemical Science Communications, Int. J. Water and Wastewater Treatment, Journal of Materials and Environmental Science, Universal Journal of Environmental Research and Technology

**e. Reviewer of research articles for renowned publishers like ACS, ECS, Elsevier, John Wiley, RSC, Springer and Taylor & Francis**

## LIST OF PUBLICATIONS

Since I am working in diverse areas of electrochemistry, my publications are categorized viz., Water Treatment and Waste Management, Hydrogen Energy, Synthesis of Electro-inorganic Chemicals, Batteries, Reviews, Editorials, Papers in Proceedings and Book Chapters.

### A. Water Treatment and Waste Management

53. Dodecyl sulfate chain anchored bio-char to sequester triaryl methane dyes: Equilibrium, kinetics, and adsorption mechanism  
S. Mohammad Wabaidur, M.Ali Khan, S.Vasudevan M. RazaSiddiqui, Z. Abdullah Alothman, M. Saad Al-Ghamdi, I.H. Al-Sohami  
Desalination and Water Treatment (2017) – in press
52. Eco-friendly and easily prepared Graphene Nanosheets for Safe Drinking Water: Removal of Chlorophenoxyacetic Acid Herbicides  
R. Kamaraj, P. Aarthi, M. Rajiv Gandhi, A. Shibayama, S. Vasudevan  
ChemistrySelect 2 (2017) 342-355
51. Eco-friendly and facile integrated biological-cum-photo assisted electrooxidation process for degradation of textile wastewater  
A. Priyadharshini, S. Vasudevan, Sergio Ferro, G. Rajagopal  
Water Research 93 (2016) 230-241
50. Facile one-pot synthesis of nano-zinc hydroxide by electro-dissolution of zinc sacrificial anode and their application towards adsorption of  $\text{Th}^{4+}$ ,  $\text{U}^{4+}$  and  $\text{Ce}^{4+}$  from aqueous solution  
R. Kamaraj and S.Vasudevan\*  
Research on Chemical Intermediates 42 (2016) 4077-4095
49. Facile one-pot electrosynthesis of  $\text{Al}(\text{OH})_3$  - kinetics and equilibrium modeling for adsorption of 2,4,5-trichlorophenoxyacetic acid from aqueous solution.  
R. Kamaraj and S. Vasudevan\*  
New Journal of Chemistry 40 (2016) 2249 – 2258
48. Adsorption kinetics, isotherms and thermodynamic studies for  $\text{Hg}^{2+}$  adsorption from aqueous medium using alizarin red-S loaded amberlite IRA-400 resin  
Mu. Naushad, S. Vasudevan, G. Sharma, A. Kumar, Z.A. ALOthman  
Desalination and Water Treatment 57 (2016) 18551–18559
47. Kinetics, thermodynamics and isotherm modeling for removal of nitrate from liquids by facile one-pot electrosynthesized nano zinc hydroxide  
R. Kamaraj, P. Aarthi, S. Jayakiruba, Mu. Naushad and S. Vasudevan  
Journal of Molecular Liquids 215 (2016) 204–211

46. Adsorption of herbicide 2-(2,4-dichlorophenoxy) propanic acid by electrochemically generated aluminum hydroxide: an alternate to chemical dosing.  
R. Kamaraj, D.J. Davidson, G.Sozhan and S.Vasudevan\*  
RSC Advances 5 (2015) 39799 – 39809
45. Decontamination of selenate from aqueous solution by oxidized multi-walled carbon nanotubes  
R. Kamaraj and S.Vasudevan\*  
Powder Technology 274 (2015) 268 – 275
44. Evaluation of electrocoagulation process for the removal of strontium and cesium from aqueous solution.  
R.Kamaraj and S.Vasudevan\*  
Chemical Engineering Research and Design 93 (2015) 522-530
43. Removal of lead from aqueous solutions by electrocoagulation: Isotherm, kinetics and thermodynamic studies  
R. Kamaraj, P. Ganesan, S.Vasudevan\*  
Int. J. Environmental Science and Technology 12 (2015) 683 - 692
42. Use of hydrous titanium dioxide as potential sorbent for the removal of manganese from water  
R. Kamaraj, P.Ganesan and S.Vasudevan\*  
Journal of Electrochemical Science and Engineering 4 (2014) 187 - 201
41. Adsorption of 2,4-dichlorophenoxyacetic acid (2,4-D) from water by in situ generated metal hydroxides using sacrificial anodes  
R. Kamaraj, D.Jonas Davidson, G.Sozhan and S.Vasudevan\*  
J. Taiwan Institute of Chemical Engineers 45 (2014) 2943 - 2949
40. An in-situ electrosynthesis of metal hydroxides and their application for adsorption of 4-chloro-2-methylphenoxyacetic acid (MCPA) from aqueous solution  
R. Kamaraj, D.Jonas Davidson, G.Sozhan, S.Vasudevan\*  
Journal of Environmental Chemical Engineering 2 (2014) 2068 - 2077
39. An efficient removal of phenol from water by peroxi-electrocoagulation processes  
S.Vasudevan\*  
Journal of Water Process Engineering 2 (2014) 53-57
38. Application of isotherm, kinetic and thermodynamic models for the adsorption of nitrate ions on graphene from aqueous solution.  
P.Ganesan, R.Kamaraj, S. Vasudevan\*  
Journal of the Taiwan Institute of Chemical Engineers 44 (2013) 808-814
37. Graphene – A Promising Material for Removal of Perchlorate ( $\text{ClO}_4^-$ ) from Water  
J.Lakshmi, S.Vasudevan\*

- Environmental Science and Pollution Research 20 (2013) 5114 – 5124
36. Removal of copper from water by electrocoagulation process - Effect of alternating current (AC) and direct current (DC)  
R.Kamaraj, P.Ganesan, J.Lakshmi, S.Vasudevan\*  
Environmental Science and Pollution Research 20 (2013) 399-412
  35. Electrochemically assisted coagulation for the removal of boron from water using zinc anode.  
S.Vasudevan\*, J.Lakshmi and G.Sozhan  
Desalination 310 (2013) 122–129
  34. Simultaneous removal of Co, Cu and Cr from water by electrocoagulation  
S.Vasudevan, J.Lakshmi and G.Sozhan  
Toxicological & Environmental Chemistry 94 (2012) 1930–1940
  33. Studies on the removal of arsenate from water through electrocoagulation using direct and alternating current  
S.Vasudevan\*, J.Lakshmi, G.Sozhan  
Desalination and Water Treatment 48 (2012) 163 -173
  32. Recovery of Hydrogen and Removal of Nitrate from Water by Electrocoagulation Process  
J. Lakshmi, G. Sozhan, S. Vasudevan\*  
Environmental Science and Pollution Research 20 (2013) 2184-2192
  31. A critical study on the removal of copper by an electrochemically assisted coagulation: Equilibrium, kinetics and thermodynamics  
S. Vasudevan\* J. Lakshmi, R. Kamaraj and G. Sozhan  
ASIA-PACIFIC JOURNAL OF CHEMICAL ENGINEERING 8 (2012) 162-171
  30. Removal of manganese from water by electrocoagulation: Adsorption, Kinetics and Thermodynamic studies.  
P. Ganesan, J. Lakshmi, G. Sozhan and S. Vasudevan\*  
Canadian Journal of Chemical Engineering 91 (2013) 448-458
  29. Oxidized Multiwalled Carbon Nanotubes as Adsorbent for the Removal of Manganese from Aqueous Solution  
P. Ganesan, R. Kamaraj, G. Sozhan, S.Vasudevan\*  
Environmental Science and Pollution Research 20 (2013) 987 – 996.
  28. The Adsorption of Phosphate by Graphene from Aqueous Solution.  
S. Vasudevan and J. Lakshmi  
RSC Advances 2 (2012) 5234 - 5242

27. Optimization of Electrocoagulation Process for the Simultaneous Removal of Mercury, Lead and Nickel from Contaminated Water.  
S.Vasudevan \*, J.Lakshmi, G.Sozhan  
Environmental Science and Pollution Research 19 (2012) 2734-2744
26. Effects of alternating current (ac) and direct current (dc) in electrocoagulation process for the removal of iron from water  
S.Vasudevan  
Canadian Journal of Chemical Engineering 90 (2012) 1160 - 1169
25. Process Conditions and Kinetics for the Removal of Copper from Water by Electrocoagulation  
S.Vasudevan \*, J.Lakshmi  
Environmental Engineering Science 29 (2012) 563-572
24. Electrocoagulation studies on the removal of copper from water using mild steel electrode.  
S.Vasudevan, J.Lakshmi, G.Sozhan  
Water Environment Research 84 (2012) 209-219
23. Electrochemical removal of boron from water: adsorption and thermodynamic studies  
S.Vasudevan \*, J.Lakshmi  
Canadian Journal of Chemical Engineering 90 (2012) 1017 - 1026
22. Effect of alternating and direct current in an electrocoagulation process on the removal of cadmium from water.  
S. Vasudevan and J. Lakshmi  
Water Science and Technology 65 (2012) 253 – 360
21. Effects of alternating and direct current in electrocoagulation process on the removal of cadmium from water  
S. Vasudevan \*, J.Lakshmi and G.Sozhan  
J. Hazard. Mater – 192 (2011) 26 – 34
20. Effects of alternating and direct current in electrocoagulation process on the removal of cadmium from water – A novel approach  
S.Vasudevan, J.Lakshmi  
Sep. Purifi. Technol. – 80 (2011) 643 – 651.
19. Studies relating to an electrochemically assisted coagulation for the removal of chromium from water using zinc anode  
S. Vasudevan and J. Lakshmi  
Water Science and Technology: Water supply 11 (2011) 142 - 150.
18. Studies on the Al-Zn-In – alloy as anode material for the removal of chromium from drinking water in electrocoagulation process



S.Vasudevan\*, J.Lakshmi and G.Sozhan  
Desalination 275 (2011) 260 - 268.

17. Effects of alternating and direct current in electrocoagulation process on the removal of fluoride from water.  
S.Vasudevan\*, B.Suresh Kannan, J.Lakshmi, S.Mohanraj and G.Sozhan  
J.Chem.Technol.Biotech 86 (2011) 428 – 436.
16. Nitrate reduction in water: Influence of the addition of a second metal on the performances of the Pd/CeO<sub>2</sub> catalyst  
D. Abirami, S.Vasudevan, Florence Epron  
J. Hazard. Mater 185 (2011) 1412–1417
15. Electrocoagulation studies on removal of cadmium using magnesium electrode.  
S.Vasudevan\*, J.Lakshmi, M.Packiyam  
J. Appl. Electrochem. 40 (2010) 2023-2032.
14. Studies on the removal of arsenate by electrochemical coagulation using aluminium alloy anode.  
S.Vasudevan, J.Lakshmi, G.Sozhan  
Clean – 38 (2010) 506–515
13. Studies Relating to Removal of Arsenate by Electrochemical Coagulation Optimization, Kinetics, Coagulant Characterisation.  
S.Vasudevan, J.Lakshmi, G.Sozhan  
Sep.Sci.Technol 45 (2010) 1313 - 1325
12. Optimization of the process parameters for the removal of boron from drinking water by electrocoagulation – A clean technology.  
S.Vasudevan, S.Margrat Sheela, J.Lakshmi and G.Sozhan  
J.Chem.Technol.Biotech 85 (2010) 926 -933
11. Removal of NO<sub>3</sub><sup>-</sup> from Drinking Water by Electrocoagulation – An Alternate Approach  
S.Vasudevan, Florence Epron, J.Lakshmi, S.Ravichandran, S.Mohan, G.Sozhan  
Clean 38 (2010) 225 – 229
10. Electrochemical coagulation for chromium removal: Process optimization, Kinetics, Isotherm and Sludge characterization  
S.Vasudevan, J.Lakshmi, R.Vanathi  
Clean 38 (2010) 9 – 16.
9. Optimization of the process parameters for the removal of phosphate from drinking water by electrocoagulation.  
S.Vasudevan, J.Lakshmi, G.Sozhan  
Desalination and Water Treatment 12 (2009) 407 – 414.

8. Studies on the Mg-Al-Zn – alloy as anode for the removal of fluoride from drinking water in electrocoagulation process.  
S.Vasudevan, J.Lakshmi, G.Sozhan  
Clean 37 (2009) 372 – 378.
7. Removal of Iron from Drinking Water by electrocoagulation: Adsorption and kinetics studies.  
S.Vasudevan, J.Jayaraj, J.Lakshmi and G. Sozhan  
Korean J. Chem. Eng. 26 (2009) 1058-1064.
6. Studies on the Removal of Iron from Drinking Water by electrocoagulation - A Clean Process  
S.Vasudevan\*, J.Lakshmi and G.Sozhan  
Clean 37 (1) (2009) 45 – 51
5. Remediation of phosphate-contaminated water by electrocoagulation with aluminium, aluminum alloy and mild steel anode.  
S.Vasudevan, J.Lakshmi, J.Jayaraj, G.Sozhan  
J. Hazard. Mater. 164 (2009) 1480-1486
4. Studies on the removal of phosphate from Drinking Water by Electrocoagulation Process.  
S.Vasudevan, G.Sozhan, S.Ravichandran, J.Jayaraj, J.Lakshmi, S.Margrat Sheela  
Ind. Eng. Chem. Res. 47 (2008) 2018– 2023
3. Electrochemical Regeneration of Chromium Containing Solution from Metal Finishing Industry  
S.Vasudevan, G.Sozhan, S.Mohan, R.Balaji, P. Malathy and S. Pushpavanam  
Ind. Eng. Chem. Res. 46 (2007) 2898 – 2901.
2. Recovery of Chromium from the Solid Residue by In-Situ-Generated Hypochlorite  
G.Sozhan, S.Mohan, S.Vasudevan\*, R.Balaji, and S. Pushpavanam  
Ind. Eng. Chem. Res. 45 (2006) 7743-7747.
1. Studies on the Oxidation of As(III) to As(V) by In-Situ-Generated Hypochlorite  
S.Vasudevan, S.Mohan, G.Sozhan, N.S.Raghavendran, and C.Vadivel Murugan  
Ind. Eng. Chem. Res. 45 (2006) 7729-7732.

## **B. Hydrogen Energy**

13. An Investigation of Interfacial and Photoelectrochemical Performance of Thermally Prepared C,N-codoped TiO<sub>2</sub> Photoanodes for Water Splitting  
R. Venkatkarthick, D. Jonas Davidson, S. Ravichandran, G. Sozhan,  
S. Vasudevan\*  
ChemistrySelect 2 (2017) 288-294

12. New Insight into Understand the Enhanced Photoconductivity Properties of Ti (O<sub>2</sub>) Plate Spurred with Al<sub>2</sub>O<sub>3</sub> for Water Oxidation  
R. Venkatkarthick, G.V.M. Kiruthika, D. Jonas Davidson, S. Ravichandran, G. Sozhan, S. Vasudevan\*  
ChemistrySelect 1 (2016) 5037 – 5041
11. Eco-friendly and facilely prepared silica modified amorphous titania (TiO<sub>2</sub>-SiO<sub>2</sub>) electrocatalyst for O<sub>2</sub> and H<sub>2</sub> evolution reaction  
R. Venkatkarthick, D. J.Davidson, S. Ravichandran, S. Vengatesan, G. Sozhan, S. Vasudevan\*  
Catalysis Science and Technology 5 (2015) 5016 – 5022
10. Novel cross-linked anion exchange membrane based on hexaminium functionalized poly (vinylbenzyl chloride)  
S. Vengatesan, S. Santhi, G. Sozhan, S. Ravichandran, D. J. Davidson, S. Vasudevan  
RSC Advances 5 (2015) 27365 – 27371
9. Platinum deposition on Nafion membrane by impregnation reduction using nonionic surfactant for water electrolysis - An alternate approach.  
S. Ravichandran, R. Venkatkarthick, A. Sankari, S. Vasudevan, D Jonas Davidson, G. Sozhan  
Energy 68 (2014) 148-151
8. Studies on polymer modified metal oxide anode for oxygen evolution reaction in saline water.  
R. Venkatkarthick, S. Elamathi, D. Sangeetha, R. Balaji, B. Suresh Kannan, S. Vasudevan, D. Jonas Davidson, G. Sozhan, S. Ravichandran  
J. Electroanal. Chem 697 (2013) 1 – 4
7. Sulfonated polystyrene-block-(ethylene-ran-butylene)-block-polystyrene (SPSEBS) membrane for sea water electrolysis to generate hydrogen,  
S. Ravichandran, R. Balaji, B. Suresh Kannan, S. Elamathi, D. Sangeetha, J. Lakshmi, S. Vasudevan, G. Sozhan  
ECS Transactions 33 (2011) 157 - 166
6. Sulfonated Poly (Ether Ether Ketone)-Based Composite Proton-Exchange Membrane for Energy Production.  
S. Seetharaman, G. Sozhan, S. Ravichandran, S. Vasudevan & J. Davidson  
International Journal of Polymeric Materials, 60 (2011) 742-753
5. Polyvinyl alcohol based membrane as Separator for Alkaline Water Electrolyzer.  
S. Seetharaman, S. Ravichandran, D.J. Davidson, S.Vasudevan and G. Sozhan  
Separation Science and Technology 46 (2011) 1563 - 1570
4. Development and performance evaluation of Proton Exchange Membrane (PEM) based hydrogen generator for portable applications

R. Balaji, N. Senthil, S. Vasudevan, S. Ravichandran S. Mohan, G. Sozhan\*,  
S. Madhu, J. Kennedy, S. Pushpavanam, MalathyPushpavanam  
Int. J. Hydrogen Energy 36 (2011) 1399 – 1403

3. An alternative approach to selective seawater oxidation for hydrogen production.  
R. Balaji, B. Suresh Kannan, J. Lakshmi, S. Vasudevan, G. Sozhan, A.K.Shukla,  
S.Ravichandran.  
  
Electrochem. Comm. 11 (2009) 1700-1702.
2. Effect of chromate ion on the formation of black film on the cathode in alkaline  
water electrolysis.  
S.Vasudevan and S.Pushpavanam  
Trans. SAEST., 35 (2000) 119-122.
1. Kinetics of hydrogen evolution on iron and nickel in sulfuric acid solutions on  
the presence of added metal ions.  
V.Yegnaraman and S.Vasudevan  
Trans. SAEST, 24(4) (1989) 223

### **C. Preparation of Electrochemical**

14. Studies relating to cathodic reduction of hypochlorite in neutral chloride  
solutions – used in chlorate processes.  
S.Vasudevan  
Res. J. Chem. Sci. 2 (2012) 55-59
13. Optimization of the Process Parameters for an Electrochemical Preparation of  
Strontium Perchlorate  
S.Vasudevan  
Korean J. Chem. Eng. 26 (5) (2009) 1246-1251
12. Studies relating to cathodic reactions in neutral chloride solutions used in  
chlorate processes  
S.Vasudevan  
Ind. Eng. Chem. Res. 47 (2008) 5742–5745
11. Studies Relating to Electrolytic Preparation of Potassium Bromate.  
S.Vasudevan\*  
Ind. Eng. Chem. Res. 47 (2008) 1743 - 1746
10. Effect of Cations of Alkali and Alkaline-Earth metal Chlorides for Chlorine  
Evolution Reaction.  
S.Vasudevan\*  
Ind. Eng. Chem. Res. 47 (2008) 976-979
9. Studies on the Electrochemical Preparation of  $Sb_2O_3$ .  
S. Mohan, S.Pushpavanam and S.Vasudevan\*

- Ind. Eng. Chem. Res. 46 (2007) 7870-7874
8. Studies on the Electrolytic Preparation of Ba(ClO<sub>4</sub>)<sub>2</sub>.  
S. Vasudevan\* and S.Mohan  
Ind. Eng. Chem. Res. 46 (2007) 6211-6216
  7. Electrochemical Preparation of Barium Chlorate from Barium Chloride.  
S.Vasudevan\* and S. Mohan  
Ind. Eng. Chem. Res. 45 (2006) 2923-2928
  6. An electrochemical process for the recovery of cerium from rare earths  
S.Vasudevan, S.Mohan, G.Sozhan and S.Pushpavanam.  
Hydrometallurgy 76 (2005) 115-121
  5. Electrochemical Preparation of Strontium Chlorate and Perchlorate..  
S. Vasudevan, S.Mohan, S.Pushpavanam and K.C. Narasimham.  
Bull. Electrochem. 9 (11) (1993) 693
  4. Electrolytic Preparation of magnesium chlorate from magnesium chloride.  
S. Vasudevan, S. Pushpavanam, S. Mohan and K.C. Narasimham.  
J. Appl. Electrochem., 22 (1992) 1201
  3. Electrolytic preparation of magnesium perchlorate.  
S. Vasudevan, S.Mohan, S.Pushpavanam and K.C. Narasimham.  
J. Appl. Electrochem., 22 (1992) 877
  2. Magnesium chlorate by electrolysis of magnesium chloride.  
S.Pushpavanam, S.Mohan, S.Vasudevan, S.Ravichandran and K.C.Narasimham.  
Bull. Electrochem. 6(4) (1990) 422
  1. Electrolytic preparation of magnesium chlorate.  
S.Pushpavanam, S.Mohan, S.Vasudevan, S.Ravichandran, K.C.Narasimham and  
K.I.Vasu.  
Bull. Electrochem. 5 (1989) 364

#### **D. Batteries**

5. Performance characteristics of organic-inorganic composite electrodes in magnesium reserve batteries.  
R. Thirunakaran, S. Vasudevan, N.Muniyandi, A. Sivashanmugam and  
S. Gopukumar  
J. Appl. Electrochem. 35 (2005) 1141-1144
4. Electrochemical behavior of mono-chloronitrobenzene as cathode material for magnesium reserve batteries

R. Thirunakaran, S. Vasudevan, A. Sivashanmugam and S. Gopukumar  
Journal of Power Sources 148 (2005) 112-115.

3. 1-Nitronaphthalene as a cathode material for magnesium reserve batteries.  
R.Thirunakaran, S. Vasudevan, A. Sivashanmugam, Gopu Kumar and  
N. Muniyandi.  
J. Power sources, 58 (1996) 213.

2. Performance characteristics of chloro substituted dinitro-benzene for  
magnesium reserve batteries.

N. Muniyandi, S. Vasudevan and S. Pitchumani.  
J. Power Sources, 45 (1993) 119.

1. Conductivity study of low temperature electrolytes for magnesium batteries.  
S. Gopu Kumar, S.Vasudevan and N.Muniyandi  
J. Power Sources, 39 (1992) 155.

#### **E. Reviews in journals**

7. Graphene and Graphene-Based Composites: A Rising Star in Water Purification -  
A Comprehensive Overview (with cover page)  
M. Rajiv Gandhi, Atsushi Shibayama, S. Vasudevan  
ChemistrySelect 1 (2016) 4358 – 4385

6. Can Electrochemistry Make the Worlds Water Clean? – A Systematic and  
Comprehensive Overview  
S. Vasudevan  
Int J Waste Resour. – (2016) 1-5

5. Electrochemistry - as cause and cure in water pollution - An overview  
S.Vasudevan and M.A.Oturan  
Environmental Chemistry Letters 12 (2014) 97 – 108

4. Electrolysis - Inevitable Energy Transformer in a World of Sustainable Energy  
S.Vasudevan  
IEEE xplore (2013) 306 – 311

3. Advanced Electrolytic Hydrogen Generators  
S.Pushpavanam, S.Mohan, G.Sozhan, S.Vasudevan, Malathy Pushpavanam,  
S.Madhu and J.Kennedy  
SAARC Oils & Fats Today Vol. III-IV, No. 12 & 1 Sep- Oct 2001, 82

2. Zinc chemicals.  
K.C. Narasimham, S. Pushpavanam and S. Vasudevan  
J.ILZIC, 1(4) (1993) 77-82.

1. What is new in HYDROGEN ECONOMY?  
K..C. Narasimham and S.Vasudevan  
ENCOLOGY 9 (9) (1995) 1-12

#### **F. Papers in proceedings**

5. Electrochemical Alternatives for Drinking Water Purification  
S. Vasudevan  
Proceedings of Trombay Symposium on Desalination and Water Reuse (TSDWR 2015) held at BARC, Mumbai during January 22 – 23, 2015.
4. Electrochemical Remediation Technologies for Water Contaminated by Agricultural Activities  
S.Vasudevan  
Proceedings of National Ground Water Conference (NGWC-2013) on Problems, Challenges and Management of Groundwater in Agriculture held at Water Technology Centre, Tamilnadu Agricultural University, Coimbatore during December 9-11, 2013
3. Electrochemical Processes for Environmental Applications - Special Emphasize on CECRI technologies  
S. Vasudevan  
Proceedings of Fifth International Groundwater Conference (IGWC-2012) on the assessment and management of groundwater resources in hard rock systems with special reference to basaltic terrain held at Maulana Azad College of Arts, Science & Commerce, at Aurangabad, Maharashtra, Indi a during December 18-21, 2012
2. Water Resources, Pollution and Electrochemical Technologies for Water Purification.  
S. Vasudevan  
Proceedings of ELAC 2013 held during 16-20 January 2013 at Hyderabad, India.
1. Hydrogen Generation – by Water Electorlysis  
S.Vasudevan  
Proceedings of ELAC-2010 held during 16 – 18 March 2010 at Puri, India

#### **G. Editorial Article and other articles**

11. Electrochemical Technologies for Drinking Water Up-gradation  
S.Vasudevan  
NESA – News Letter 18 (10) (2015) 2
10. Safe Water, Secure Lives – Removing Nitrate from Potable Water  
S. Vasudevan and Florence Epron  
ENSEMBLE 2 (2014) 6-9

9. Electrochemical Processes for Water Quality Upgradation  
S.Vasudevan  
Int. J. Waste Resources 3 (1) (2013) 1-3
8. Cathodes for Electrochemical Processes (Part-II)  
S.Vasudevan  
Res. J. Chem. Sci. 3 (8) (2013) 1-2
7. Cathodes for Electrochemical Processes (Part-I)  
S.Vasudevan  
Res. J. Chem. Sci. 3 (7) (2013) 1-2
6. Anodes for Electrochemical Processes (Part-II)  
S.Vasudevan  
Res. J. Chem. Sci. 3 (6) (2013) 1-2
5. Anodes for Electrochemical Processes (Part-I)  
S.Vasudevan  
Res. J. Chem. Sci. 3 (5) (2013) 1-2
4. Opportunities and Challenges in Electrochemicals  
S.Vasudevan  
Res. J. Chem. Sci. 3 (4) (2013) 1-3
3. Membranes and Diaphragms for Electrochemical Processes (Part - II)  
S.Vasudevan  
Res. J. Chem. Sci. 3 (3) (2013) 1-3
2. Membranes and Diaphragms for Electrochemical Processes (Part - I)  
S.Vasudevan  
Res. J. Chem. Sci. 3 (2) (2013) 1-3
1. Electrochemistry—for Green and Clean Environment  
S. Vasudevan  
Res. J. Chem. Environ 16 (2012) 3-6

#### **H. Book Chapters**

7. An overview of electrochemical processes for purification of contaminated water by agricultural activities.  
S.Vasudevan  
Groundwater: Assessment, Modeling and Management, CRS Press, Taylor & Francis, UK 2016



6. Electrochemistry and water Pollution.  
S.Vasudevan and M.A.Oturan  
Environmental Chemistry for a Sustainable World, Volume 3, Springer 27-68 (2013)
5. Electrochemical Reactors  
Helmut Vogt, G. Kreysa, S. Vasuvedan, R. Wüthrich  
ULLMANN's Encyclopedia of Industrial Chemistry, 7<sup>th</sup> Edition, Wiley-VCH,  
2-45 (2014)
4. Aluminium alloy anodes: Application towards the removal of boron from  
drinking water by electrocoagulation  
S. Vasudevan\* and J.Lakshmi  
Aluminum Alloys: Preparation, Properties and Applications, Nova Science  
Publishers Inc., USA.
3. Alkaline Earth Metal Perchlorates: Electrochemical Preparation and Reaction  
mechanisms  
S. Vasudevan  
Perchlorates: Production, Uses and Health Effects, Nova Science Publishers  
Inc., USA.
2. Studies on the Electrochemical Oxidation of Aqueous  $\text{SrCl}_2$  to  $\text{Sr}(\text{ClO}_3)_2$ .  
S. Vasudevan  
Electrolysis: Theory, Types and applications, Chapter 14; Nova Science  
Publishers Inc., USA
1. Chlorine Oxides and Chlorine Oxygen Acids  
Helmut Vogt, Jan Balej, John E. Bennett, Peter Wintzer, Saeed Akbar  
Sheikh, Patrizio Gallone, S. Vasuvedan, Kalle Pelin  
ULLMANN's Encyclopedia of Industrial Chemistry, 7<sup>th</sup> edition, Wiley-VCH,  
624 – 677 (2014)