CURRICULUM VITAE

Name
Dr. R.Balaji

Designation
Scientist

Qualification
Ph.D (Chemistry)

Experience
09 years

Research areas of Interest

Electrochemistry, Electrolytic hydrogen Generation, Membrane Electrode Assembly (MEA) for Polymer electrolyte Membrane (PEM) based water electrolyser and fuel cell, Metal-Air battery, Electrodeposition, Corrosion and water & waste water treatment.

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List of Journal Publications

1. Studies on Noble metal free carbon based cathodes for Magnesium–Hydrogen peroxide fuel Cells.
   K. Naga Mahesh, **R. Balaji**, K.S. Dhathathreyan
   Ionics, Springer. 2015 DOI: 10.1007/s11581-015-1434- 2015.

2. Electrochemical behavior of nickel based electrodes for oxygen evolution reaction in alkaline water electrolysis
   S.Seetharaman**, R.Balaji**, K.Ramya, K.S.Dhathathreyan, M.Velan
   Ionics, Springer 2013 DOI 10.1007/s11581-013-1032-9.

3. Graphene oxide modified non noble metal electrode for alkaline anion exchange membrane water electrolyzer"
   S.Seetharaman**, R.Balaji**, K.Ramya, K.S.Dhathathreyan, M.Velan.
   International *Journal of Hydrogen Energy*, 38, **2013,** 14934-14942

4. Studies on polymer modified metal oxide anode for oxygen evolution reaction in saline water
   R Venkatkarthick; S Elamathi; D Sangeetha; **Balaji Rengarajan**; B Suresh Kannan; S Vasudevan; D Jonas Davidson; G Sozhan; Subbiah Ravichandran

Journal of Electroanalytical Chemistry, 697, **2013,**1-4

5. Operation method study based on the energy balance of an independent microgrid using solar-powered water electrolyzer and an electric heat pump "
Shin'ya Obara, Seizi Watanabe, ***Balaji Rengarajan***
Energy, *36(8)*, ***2011,*** *5200-5213.*

5. "Operation planning of an independent microgrid for cold regions by the distribution of fuel cells and water electrolyzers using a genetic algorithm"
Shin'ya Obara, Seizi Watanabe, ***Balaji Rengarajan***
International Journal of Hydrogen Energy, 3*6(22)*, ***2011,*** *14295-14308*

6. Operational Planning of an engine generator using a high pressure working fluid composed of CO_2 hydrate
Shin'ya Obara, Takanobu Yamada, Kazuhiro Matsumura, Shiro Takahashi, Masahito Kawai, ***Balaji Rengarajan***
Applied Energy, *88(12)* ***2011***, *4733-4741*

7. Sulfonated polystyrene-block-(ethylene-ran-butylene)-block-polystyrene (SPSEBS) membrane for sea water electrolysis to generate hydrogen.
Subbiah Ravichanran , **Rengarajan Balaji,** Balasingam Suresh Kannan,Swaminathan Elamathi, Dharmalingam Sangeetha, Jothinathan Lakshmi, Subramanian Vasudevan and Ganapathy Sozhan
ECS Transactions, 33 (27) ***(2011)*** *157-166*

8. "Unconventional Hydrogen Compression in an electrochemical method"
S.Navaneethakrishnan, G.Sozhan,S.Vasudevan,S.Ravichandran, ***Rengarajan Balaji,***
Accepted for Publication in Jordan Journal of Mechanical and Industrial Engineering. **2011**

9. "Development and Performance evaluation of polymer electrolyte membrane (PEM) Based hydrogen generator for portable applications"
Rengarajan Balaji, N.Senthil, Subramanian Vasudevan, Subbiah Ravichandran,.Ganapathy Sozhan.
*Int.J.Hydrogen Energy, 36 (****2011****)1399-1403.*

10. "An alternative approach to selective sea water oxidation for hydrogen production "
Rengarajan Balaji, Balasingam Suresh Kannan,Jothinathan Lakshmi, Subramanian Vasudevan, Ganapathy Sozhan, Ashok Kumar Shukla, and Subbiah Ravichandran.
Electrochemistry Communication 11(8) ***2009,*** *1700-1703.*

11. "Aqueous methanol electrolysis using proton conducting membrane for hydrogen production"
G.Sasikumar A.Muthumeena, S.Sundar Pethaiah,N.Nachiapanand ***Rengarajan Balaji.***
Int. J.of Hydrogen energy. 33, ***2008***, 5905-5910.

12. "Electrochemical regeneration of chromium containing solution from metal finishing industry" Subramanyan Vasudevan, Ganapathy Sozhan, Swaminathan Mohan, ***Rengarajan Balaji,*** Pushpavanam Malathy, and Subramanian Pushpavanam
Ind. Eng. Chem. Res. 46, ***2007***, 2898-2901.
13. "Recovery of chromium from the solid residue by In-Situ- generated hypochlorite." Ganapathy Sozhan, Swaminathan Mohan, Subramanyan Vasudevan, ***Rengarajan Balaji*** and Subramanian Pushpavanam
Ind. Eng. Chem. Res. 45, ***2006***, 7743-7747.

14. "Electrodeposition of bronze–PTFE composite coatings and study on their tribological characteristics."
Rengarajan Balaji, Malathy Pushpavanam, K. Yogesh Kumar, K. Subramanian
Surface & Coatings Technology 201, ***2006***,, 3205-3211.

15. *Electrodeposition of Copper-Tin-Ptfe composite coatings.*
Balaji, R. and Pushpavanam, M. and Yogeshkumar, K. and Subramanian
Indian Surface Finishing, 3 (3-4) 2006, pp. 381-391. ISSN 0972-9364

16. "Methane sulfonic acid in electroplating related metal finishing industry."
Rengarajan Balaji and Malathy Pushpavanam
Translated and Published by *Electroplating and Finishing in China* 23(5), ***2004*****,** 40-45.

17. "Methane Sulfonic Acid in Electroplating Related Metal Finishing Industry"
Rengarajan Balaji and Malathy Pushpavanam
T*ransaction of Institute of Metal Finishing* 81(5), ***2003***, 154-158. (IF: 1.000)

List of Patents

1. "A Polymer Electrolyte Membrane (PEM) cell and a method of producing hydrogen from aqueous organic solutions in pulse current mode"
K.S.Dhathathreyan, ***R.Balaji***, K.Ramya, N.Rajalakshmi.
Indian Patent Application no. 3313/DEL/2012.

2. Exfoliated Graphite separator based Electrolyzer for Hydrogen generation".
K.S.Dhathathreyan, ***R.Balaji***, K.Ramya, N.Rajalakshmi, L.Babu, R.Vasu, P.Sarangan, R.Parthasarathy
Indian Patent Application no. 3073/DEL/2013

Conferences Proceedings

1. Methanol-Water electrolysis using TNT based composite membrane for hydrogen gas generation
N.Manjula, R.Balaji, K.Ramya, K.S.Dhathathreyan, A. Ramachandraiah

Paper presented in National Conference on Advanced Functional Materials (NCAFM-15), at SRM University, Chennai on May 8-9, 2015.

2. Hydrogen Generation via Urea electrolysis using Nickel alloy electrode"
L.S.Ranjani, **R.Balaji**, K.Ramya, K.S.Dhathathereyan
Paper Presented in National Symposium on electrochemical Science and Technology (NSEST-13) at Indian Institute of Science, Bangalore on Aug 23-24, 2013

3. Carbon Assisted Water Electrolysis for Hydrogen Generation"
S.Sabareeswaran, **R.Balaji**, K.Ramya, N.Rajalakshmi, K.S.Dhathathereyan
AIP conference proceedings, 1538, 43-47 (2013)

4. "Synergistic effect of stabilizer in alkaline water electrolysis"
S.Seetharaman , **R.Balaji** , K.Ramya , K.S.Dhathathereyan , M.Velan
Paper Presented in Seventeenth National convention of Electrochemists(NCE-17) at B.S.Abdur Rahman University, Chennai on 14-15th Sep' 2012

4. "Sulfonated polystyrene-block-(ethylene-ran-butylene)-block-polystyrene (SPSEBS) membrane for sea water electrolysis to generate hydrogen"
Subbiah Ravichanran ,***Rengarajan Balaji***, Balasingam Suresh Kannan, Swaminathan Elamathi, Dharmalingam Sangeetha, Jothinathan Lakshmi, Subramanian Vasudevan, Ganapathy Sozhan.
218th ECS Meeting Las Vegas, USA, on October 10-15, ***2010.***

6. "Electrochemical compression of hydrogen
Sozhan Ganapathy, Vasudevan Subramanian, Ravichandran Subbiah, ***Balaji Rengarajan,*** Navaneethakrishnan Sadayan, Sankari Vasantha, and Lakshmi Jothinathan
217th ECS Meeting. Canada, on April 25-30, ***2010***.

7. Sulfonated polystyrene-block-(ethylene-ran-butylene)-block-polystyrene (SPSEBS) membrane for sea water electrolysis to generate hydrogen"
Subbiah Ravichanran ,***Rengarajan Balaji***, Balasingam Suresh Kannan, Swaminathan Elamathi, Dharmalingam Sangeetha, Jothinathan Lakshmi, Subramanian Vasudevan, Ganapathy Sozhan.
218th ECS Meeting Las Vegas, USA, on October 10-15, ***2010.***

8. "Hydrogen production from renewable energy sources"
Rengarajan Balaji, Shinya Obara

SAEST News letter, India ***2009****, 4(3),1.*

9. "Water oxidation on various carbon electrodes"
   S.Ravichandran, S.Vasudevan, G.Sozhan, , N.Senthyl, ***Rengarajan Balaji.*** J.Lakshmi
   3rd International conference on Electrochemical Power Systems (ICEPS-3) ,
   Trivanandapuram, India on Nov 26-28, ***2008***.

10. "Comparative performance of copper electro deposition from sulphonate and sulfate bath"
    Rengarajan Balaji and Malathy pushpavanam
    Futuristic aspect of Electrochemical Science and Technology held at CECRI, Karaikudi, India on July ***2003.***

11. "Recovery of chromium value from the solid residue of chromate plant"
    S.Pushpavanam, G.Sozhan, S.Mohan, S.Vasudevan, and ***Rengarajan Balaji.***
    7 th International Symposium on Advances in Electrochemical Science and Technology Chennai, India on Nov'27-29 ***2002***.

12. "Recovery of chromium from chromate plant solid effluent"
    S.Pushpavanam, G.Sozhan, S.Mohan, and Rengarajan ***Balaj***i.
    14th International forums on applied electrochemistry' held at Florida, USA ,on Nov.12-16, ***2000.***

Invited Talk Delivered

1. **"**PEM fuel cell technology for Sustainable future" at the National conference on Frontiers chemistry and Environment held at Dept of Chemistry, Abdul Hakeem College of engineering, Vellore on March 28, 2015.

2. "Material Aspects of Electrolytic Hydrogen generation" at the " National Conference on Advanced Materials in energy and Environmental Applications held at Dept of Physics, Bharathiyar University, Coimbatore on March 20,2015

3. Electrochemistry and its application-An introduction " Workshop on Functional coatings Recent Trend at Thiagarajar College of Engineering, Madurai, Tamilnadu on 6th March 2015

4. Hydrogen and Fuel cell Technologies for Sustainable Future" Workshop on Fuel cell Technology at SCAD Engineering College, Tirunelveli, on 5th Jan 2015.

5. Hydrogen Energy Technology-An Overview " Guest Lecture for M.Tech Programme at Rural Energy Centre, Gandhigramam Rural Institute, Gandhigramam, Tamilnadu on 15th Dec' 2014.

6. Recent Trend in Hydrogen Production Technologies" National Seminar on Recent Research

Trend in Chemistry Conducted by Abdul Hakeem College, Vellore, 26th Sep 2014.

7. Hydrogen fuel cell Technology-An Introduction" Seminar on Renewable Energy, conducted by Rural Energy Centre, Gandhigramam Rural Institute, Gandhigramam, Tamilnadu on 13th Dec' 2013.

8. "Hydrogen Generation by Electrolysis of Water-A Green Route" Seminar on Green Chemistry, Conducted by Dept. of Chemistry, Global Institute of Engg. & Technology, Vellore, Tamilnadu on 9th Nov 2013.

9. An Overview on hydrogen fuel cell technology" National Seminar on Current Scenario of Renewable Energy Resources in India, Conducted by Arulmigu Meenakshi amman college of Engineering, Kancheepuram, Tamilnadu on 19th Oct 2013.

10. Hydrogen-The fuel for Sustainable living" Chemistry Department Association meeting, Thiagarajar College of Engineering, Madurai, Tamilnadu on 6th Sep 2013.

11. Green electrolytes for Electrodeposition" National Seminar on "Green Chemistry" conducted by KSR College of Engineering, Thiruchengode, Tamilnadu, on 16th Feb 2012.

12. "Hydrogen Energy Technologies" Faculty Development Programme, Anna University Coimbatore, Tamilnadu, India, on Dec 24'2011

Accomplishments as a Team Leader/Member

- Technology developed on "Electrochemical Hydrogen Compressor" and know-how transferred to M/s. Eastern Electrolyser Ltd. New Delhi on 2009.

- Technology developed on "Activated Nickel Electrodes for Alkaline Water Electrolyzer" and know-how transferred to M/s. Eastern Electrolyser Ltd. New Delhi, on 2009.

- Developed and demonstrated 200 W Hydrogen/Air Polymer Electrolyte Membrane (PEM) fuel cell systems and supplied to Military College of Electronics and Mechanical Engineering College in Secunderabad on May' 2007.

- Electrolytes developed for "White and Yellow Bronze Coatings" for decorative applications and technology transferred to M/s.K.M. Gadia & Sons, Bangalore on July'2006.

- Process developed on "Electrodeposition of Nickel-Diamond Composite Coatings" and know-how transferred to (i) M/s. L.M. Van Moppes Diamond Tools India Pvt. Ltd. Chennai on Sep'2002. (ii) M/s. Control System & Service Engineers. Jaipur on June'2005

Affiliation to professional Society

- Fellow Member - Society for Advancement of Electrochemical Science and Technology (SAEST), India.

Awards & Honors

- Honored as Reviewer in following International Journals
  - International Journal of Hydrogen energy (ISSN 0360-3199)
  - International journal of Energy Engineering (ISSN: 2225-6571)
  - Chemical Engineering and Processing: Process Intensification (ISSN: 0255-2701)
  - Nanoscale Research Letters (ISSN: 1556-276X)
  - Corrosion Science (ISSN 0010-938X)
  - Surface and coating Technology (ISSN 0257-8972)
  - Portugaliae Electrochimica Acta (ISSN 1647-1571)
  - Ionics (ISSN 1862-0760)
  - International journal of Energy Engineering(ISSN:2225-6571)
  - Waste Management journal, (ISSN 0956-053X)
- Cash prize award for the best paper, Electroplating and finishing in China, 2004.

Contact Information

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