

Curriculum Vitae

Full Name: **SELVAKUMAR K**
Nationality: India
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Career Objective

To undertake a challenging academic position in the field of Chemistry. To be a part of a progressive academic institution that gives scope to enhance my skills, knowledge and reach the apex in the scientific field with sheer dedication and hard work.

Academic Qualifications

- ❖ **Doctor of Philosophy** – Ph.D. Chemistry (Highly commended)
(2015 to 2020) - Thesis Title “Hydrothermal and Template based Synthesis of Porous Metal Oxides for Oxygen Reduction and Oxygen Evolution Reaction Studies”

Area : Materials Science and Electrocatalysis
University : CSIR-CECRI, Karaikudi, Tamilnadu, India. (Bharathidasan University)
Supervisor : Dr. S.M. Senthil Kumar, Senior Scientist, Materials Electrochemistry Division, CSIR-CECRI, Karaikudi-630003.

- ❖ **Master of Philosophy** - M.Phil., Chemistry (Percentage 82.5%)
(2012 to 2013) - Thesis Title: “Hydrodeoxygenation of 2-Methoxy Phenol on Ni-Mo/Ti-SBA-15 Catalyst”

Area : Heterogeneous Catalysis
University : Anna University, College of Engineering, Guindy, Chennai. Tamilnadu, India.
Supervisor : Dr. K. Shanthi, Professor and Head, Dept. of. Chemistry, College of Engineering, Guindy, Chennai, Tamilnadu, India.

- ❖ **Master of Science** - M.Sc., Chemistry (Percentage 65.8%)
(2010 to 2012)- Project Title: “Synthesis and Characterization of Graphite Oxide Nanoparticles”

Area : Nanochemistry
College : Saraswathy Narayanan College, Perungudi, Madurai, Tamilnadu, India.
Supervisor : Dr. I. Baskaran, Assistant Professor, Dept. of. Chemistry, Saraswathi Narayanan College, Perungudi, Madurai, Tamilnadu, India.
University : Madurai Kamaraj University, Madurai, Tamilnadu, India.

❖ **Bachelor of Science – B.Sc. Chemistry (2004 to 2007)**

Allied Subject : Physics and Botany

Year of passed : November, 2007

College : Govt. Arts. College, Melur, Tamil Nadu, India.

University : Madurai Kamaraj University, Madurai, Tamilnadu, India.

Teaching interest for graduate students

General Chemistry, Electrochemistry, Materials Science, Advanced Nanomaterials and Their Applications, Energy conversion and Storage reaction, Chemistry Lab practical's (UG and PG level) like volumetric analysis, organic and inorganic qualitative analysis.

Teaching Skills and Other Activities

- ❖ Developing collaborations with various research groups, for the best learning experiences based on the academic requirements and related activities.
- ❖ Guided for Final year projects of UG/PG Science and Engineering Students
- ❖ Design the teaching learning activities, lab experiments and Practical's
- ❖ Good skills in handling teaching aids, software's and other online tools etc.
- ❖ Organizing National/International conferences

Teaching Experience

- ❖ Teaching Chemistry for HSC/UG/PG Students in School and College levels.
- ❖ Aug-2022 to Till date – Assistant professor in Chemistry department, GTN Arts College Dindigul, Tamilnadu.

Research Experience

- ❖ Apr-2015 to Dec 2020 – Research Scholar / Senior Research Fellow (SRF) – CSIR-CECRI, Karaikudi, India
- ❖ May-2013 to Mar-2015 – Project Fellow – CSIR-CECRI, Karaikudi, India.

Awards/Honors

- ❖ Awarded for poster presentation in the workshop on **“Battery Technologies and e-Mobility”** held at **Hindustan Petroleum Corporation Limited, HP Green R&D Centre**, Bangalore (March-2018)
- ❖ **Awarded best paper presentation (Second Prize)**– “Template free Mesoporous α -MnO₂ Nano-Materials as an Efficient Bi-functional Catalyst for Oxygen Electrodes Reaction in Alkaline medium”

International Conference on Renewable Energy Science and Technology (ICREST-2017) organized by Department of Energy Science, Alagappa University, Karaikudi, Tamil Nadu, India. Dec 2017

- ❖ **Awarded Poster presentation entitled** “Simple Hydrothermal synthesis of MoS₂ Nano bubbles as electrocatalyst for Hydrogen evolution reaction (HER) in International Conference on Green Technology for Environmental Pollution Prevention and Control (ICGTPC-2014) at National Institute of Technology, Tiruchirappalli, India. September 2014.
- ❖ **Participated/recognized** in the Workshop on Recent Advances in Materials Chemistry conducted at Bharathidasan Institute of Technology, Anna university, Tiruchirappalli. (March 2014).
- ❖ **Own the Prize (Volley Ball)our team in Annual sports meet in college (2010)** RVS College of Education, Dingidul, Tamil Nadu, India

Publications

(a) List of papers in peer reviewed journals

1. **K. Selvakumar**, S.M. Senthil Kumar, R. Thangamuthu, G. Kruthika and P. Murugan. Development of shape-engineered α -MnO₂ materials as bi-functional catalysts for oxygen evolution reaction and oxygen reduction reaction in alkaline medium, *Int. J. of Hydrogen Energy* **2014**, *39*, **21024 – 21036**.
2. **K. Selvakumar**, S.M. Senthil Kumar, R. Thangamuthu, G. Kruthika, P. Murugan, R. Parasmani, S.N. Jha and D. Bhattacharyya. Physiochemical Investigation of Shape-Designed MnO₂ Nanostructures and Their Influence on Oxygen Reduction Reaction Activity in Alkaline Solution, *J Phy. Chem. C.* **2015**, *119*, **6604 – 6618**.
3. **K. Selvakumar**, S.M. Senthil Kumar, R. Thangamuthu, R. Parasmani, D. Bhattacharyya, and S.N. Jha. 2D and 3D Silica-Template-Derived MnO₂ Electrocatalysts towards Enhanced Oxygen Evolution and Oxygen Reduction Activity. *ChemElectroChem* **2018**, *5*, **3980 – 3990**.
4. P. Masthanaiah Ette, **K. Selvakumar**, S.M. Senthil Kumar, K. Ramesha. Silica template assisted synthesis of ordered mesoporous α -MnO₂ nanostructures and their performance evaluation as negative electrode in Li-ion batteries, *Electrochimical Acta* **2018**, *292*, **532 – 539**.
5. P. Masthanaiah Ette, **K. Selvakumar**, S.M. Senthil Kumar, K. Ramesha. Ordered 1D and 3D mesoporous Co₃O₄ structures: Effect of morphology on Li-ion storage and high rate performance, *Electrochimical Acta* **2019**, *310*, **184 – 194**.
6. S.M. Senthil Kumar, **K. Selvakumar**, R. Thangamuthu, A. Karthigai Selvi, S. Ravichandran, G. Sozhan, K. Rajasekar, N. Navascues, S. Irusta. Hydrothermal assisted morphology designed

MoS₂ material as alternative cathode catalyst for PEM electrolyser application. *Int. J. of Hydrogen Energy* **2016, 41, 13331 – 13340.**

7. P. Thangasamy, **K. Selvakumar**, M. Sathish, S.M. Senthil Kumar and R. Thangamuthu. Anchoring of ultrafine Co₃O₄ nanoparticles on MWCNTs using supercritical fluid processing and its performance evaluation towards electrocatalytic oxygen reduction reaction. *Catal. Sci. Technol.* **2017, 7, 1227–1234.**
8. S.M. Senthil Kumar, **K. Selvakumar**, J. Karthikeyan, R. Thangamuthu, P. Murugan, R. Parasmani, S.N. Jha, D. Bhattacharyya, N. Navascues and S. Irusta. Manifestation of Concealed Defects in MoS₂ Nanospheres for Efficient and Durable Electrocatalytic Hydrogen Evolution Reaction. *Chemistry Select* **2017, 2, 4667 – 4672.**
9. S.M. Senthil Kumar, **K. Selvakumar** and R. Thangamuthu. One-pot hydrothermal synthesis of supported CoS electrocatalysts: The effect of support nature on oxygen reduction reaction activity in alkaline medium. *Int. J. of Hydrogen Energy* **2018, 43, 4773-4783.**
10. Naveen Chandrasekaran, **Karuppiah Selvakumar**, Viji Premkumar, Saravanakumar Muthusamy, Sakkarapalayam Murugesan Senthil Kumar, Rangasamy Thangamuthu. Dual Heteroatom-Doped Carbon Monoliths Derived from Catalyst free Preparation of Porous Polyisocyanurate for Oxygen Reduction Reaction. *ACS Sustainable Chem. Eng.* **2018, 6, 9094-9103.**
11. Velu Duraisamy, **Karuppiah Selvakumar**, Rajasekar Krishnan, and Sakkarapalayam Murugesan Senthil Kumar. Investigation on Template Etching Process of SBA-15 Derived Ordered Mesoporous Carbon on Electrocatalytic Oxygen Reduction Reaction. *Chemistry Select*, **2019, 4, 2463-2474.**
12. **Karuppiah Selvakumar**, Ulaganathan Mani, Sakkarapalayam Murugesan Senthil Kumar, Rangasamy Thangamuthu, Periasamy Padikkasu and Ragupathy Pitchai. Electrospun Carbon Nanofiber Sprinkled with Co₃O₄ as an Efficient Electrocatalyst for Oxygen Reduction Reaction in Alkaline Medium. *Chemistry Select* **2019, 4, 5160-5167.**
13. Igor Luisetto, Simonetta Tuti, Claudia Romano, Marta Boaro, Elisabetta Di Bartolomeo, Jagadesh Kopula Kesavan, Sakkarapalayam Murugesan Senthil Kumar, **Karuppiah Selvakumar**. Dry reforming of methane over Ni supported on doped CeO₂: New insight on the role of dopants for CO₂ activation, *Journal of CO₂ Utilization* **2019, 30, 63–78.**
14. **Karuppiah Selvakumar**, Velu Duraisamy and Sakkarapalayam Murugesan Senthil Kumar. Activity Manifestation via Architectural Manipulation by Cubic Silica-derived Co₃O₄ Electrocatalysts Towards Bifunctional Oxygen Electrode Performance. *New J Chem* **2021, 45, 16913-16925.**

15. **Karuppiah Selvakumar**, Velu Duraisamy, Selvaraj Venkateshwaran, Natarajan Arumugam, Abdulrahman I. Almansour, Yucheng Wang, Terence Xiaoteng Liu and Sakkarapalayam Murugesan Senthil Kumar. Development of α - MnO_2 Nanowire with Ni- and (Ni, Co)- Cation Doping as an Efficient Bifunctional Oxygen Evolution and Oxygen Reduction Reaction Catalyst. **ChemElectroChem** **2022**, **9**, e202101303.

Papers Presented in National/International Conferences

1. Paper entitled “ **Activity Manifestation through Architectural Manipulation in Hexagonal and Cubic Silica Nanocasted Co_3O_4 Electrocatalysts towards Bifunctional Oxygen Electrode performance**” in the International conference on Materials for the Millennium (MATCON 2019) held at Cochin University of Science and Technology (CUSAT), Cochin. (March-2019)
2. Paper entitled “**Study on 2D/3D Silica Template Derived MnO_2 Electrocatalysts towards Enhancement of Oxygen Evolution (OER) and Oxygen Reduction (ORR) Activity**” in the International conference on Nanoscience and Nanotechnology (ICONN 2019) held at SRM Institute of Science and Technology, Kattankulathur, Chennai. (January 2019)
3. Paper entitled “ **Edge tailored MoS_2 nanomaterials by hydrothermal tuning and their electro catalytic hydrogen evolution reaction studies**” in the First Symposium on Advanced Functional Materials (FUNMAT-2016) held at CSIR-Central Electrochemical Research Institute, Karaikudi. (May 2016)
4. Poster presentation “**Nano Designed MoS_2 and CNT Decorated MoS_2 as alternate Non-Pt Electrocatalysts for Hydrogen Production in PEM Electrolyzer**” in the International Conference on ‘Nanomaterials for Energy, Environment, Catalysis and Sensors (ICNEECS-15) held at Madurai Kamaraj University, Madurai. (December 2015)
5. Paper presented “**Shape selective synthesis of MnO_2 Nano Materials as electro catalysts for oxygen reduction reaction in alkaline medium**” in the National Conference on Materials Science and Technology held at Indian Institute of Space Science and Technology (IISST), Thiruvananthapuram. (July-2015)
6. Presented paper entitled “**Precursor tuned hydrothermal synthesis of Co_{1-x}S nano-catalyst: Evolution of support influence on electro catalytic performance towards oxygen reduction reaction in alkaline medium**” International conference on Electrochemical Science and Technology (ICONEST – 2014) organized by Electrochemical Society of India at Indian Institute of Science (IISc), Bangalore. (August 2014).

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Declaration

I do hereby confirm that the information furnished above is true to the best of my knowledge and belief.

SELVAKUMAR K

Place: Madurai

Date:

References

1) Dr. S.M. Senthil Kumar

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