Bharathiar University

State University I "A++" Grade by NAAC I 26th Rank in MoE-NIRF
Maruthamalai Road, Coimbatore, Tamil Nadu - 641 046.

Dr T SELVARAJU

Associate Professor
Department of Chemistry

Bharathiar University

Tamil Nadu
E-mail: selvaraju@buc.edu.in
Phone: 9443023600
Office Number: 0422-2428315

Research Area

- Electrodics
- New Materials for Energy Storages
- Water Splitting

Courses Teaching

- Physical Chemistry-I
- Physical Chemistry-II
- Physical Chemistry-III
- Analytical Chemistry
- Physical Chemistry Laboratory
- Physical Methods in Chemistry
- Environmental Chemistry
- Applied Chemistry
- Polymer Chemistry
- Organic Photochemistry & Spectroscopy

Research Experience: 24

Teaching Experience: 15

Research Credentials (as on November 2024 – Source: Google scholar)
H-index: 23 Citations: 1655 i10-index: 36

Patents : Granted: 1 Filed: 1

Publications
International Journals: 60

Career

Other Institutes

1. Designation : Assistant Professor
Institution Name : Karunya University
Period : July 2009 - November 2016

At Bharathiar University

1. Designation : Associate Professor
Period : November 2016 - Till Date

Education

Ph. D.
Subject : Chemistry
Institution : School of Chemistry, Madurai Kamaraj University
Affiliated University : Madurai Kamaraj University
Year of Award : December 2006

M. Phil.
Subject : Chemistry
Institution : Guindy Campus, University of Madras
Affiliated University : University of Madras
Year of Award : August 2000

Dr T SELVARAJU , Associate Professor , Department of Chemistry

M. Sc.
Subject : Chemistry
Institution : Guru Nanak College
Affiliated University : University of Madras
Year of Award : April 1999

Projects	Research Guidance

National Level
Ongoing - completed - 5

Publications

International Journals - 60

60. Unveiling the facet-dependent electrocatalytic activity of a 3D-CoSn(OH)6 perovskite material for overall water splitting: Interfacial engineering with Mn3+ ions and CH3COO- ions

Electrochim. Acta 507 (2024) 145190 (December 2024)
Gowrisankar Aruchamy, Sureka Kanthasamy, Byung-Kwon Kim, Selvaraju Thangavelu*

59. Book Title: "Handbook of 2D Materials for Sustainable Future" Chapter Title: "Two Dimensional MXene Based Nanocomposites for Sustainable Applications

CRC Press. Taylor & Francis group (November 2024)
A. Gowrisankar, P. Vanjinayaki and T. Selvaraju*

58. Orchestrating a Supercapacitive Symphony: Copper-Metal Organic Framework Integrated MXene Nanosheets on Graphite Sheet Electrodes -Unveiling its Synergistic Interactions by DFT Study

ACS Applied Energy Materials 2024, 7, 20, 9525-9542 (October 2024)
Sureka Kanthasamy, Thamarainathan Doulassiramane, Ramanathan Padmanaban, Selvaraju Thangavelu*

57. Metal–organic framework-derived Se-blended ZrO2 with a nitrogen-doped carbon heterostructure for electrocatalytic overall water splitting

Dalton Trans. 53 (2024) 17918 (October 2024)
Krishnendu M. Nair, Pavithra Shankar, Selvaraju Thangavelu*

56. Unveiling the structure-property relationships of bimetallic nickel molybdenum metal organic framework for pseudocapacitor electrode materials: A combined approach of experimental and theoretical study

Chem. Eng. J. 495 (2024) 153691 (September 2024)
Sureka Kanthasamy, Mohanapriya Subramani, Shankar Ramasamy, Selvaraju Thangavelu*

55. Book Title: "Layered Materials: Synthesis and Applications in Energy and Environmental Remediation" Chapter Title: "Layered Double Hydroxides-Based Energy Storage Devices"

Jenny Stanford Publishing Pte Ltd, Singapore, August, 2024, Chapter III (34 Pages), Taylor & Francis Group (August 2024)
A. Gowrisankar and T. Selvaraju*

54. Photoelectrochemical Water Splitting: Visible-light-driven CoTiO3@g-C3N4 Based Photoanode Interface Follows the Type II Heterojunction Scheme

Langmuir 2024, 40, 31, 16582–16594 (July 2024)
Sathiya Bama Sundararaj,§ H. Amir‡, Chinnusamy Viswanathan‡, and Selvaraju Thangavelu§*

53. Integration of sequential electrocoagulation and adsorption for effective removal of colour and total organic carbon in textile effuents and its utilization for seed germination and irrigation

Environ. Sci. Pollut. R. 31 (2024) 30716-30734 (April 2024)
Gowthaman Somasundaram, Tamizharasan Thavamani, Selvaraju Thangavelu*

52. Zn(II)-MOFs nanosheets interaction with P-doped graphitic carbon nitride nanosheets for effective overall water splitting in alkaline medium

J. Electroanal. Chem. 954 (2024) 117968 (January 2024)
Krishnendu M. Nair, Gowrisankar Aruchamy, Selvaraju Thangavelu*

Dr T SELVARAJU , Associate Professor , Department of Chemistry

51. Significantly boosting electro- and photocatalytic hydrogen evolution by MoSe2 nanospherical arrays

Ionics 30 (2024) 457-469 (December 2023)
A. Gowrisankar, A. Subhasini, T. Saravanakumar, T. Selvaraju*

50. Efficient integration of electrocoagulation treatment with the spray-pyrolyzed activated carbon coating on stainless steel electrodes for textile effluent-bath reuse with ease

Water Environ. Res. 2023, 95, e10938, p1-18 (October 2023)
S. Gowthaman, T. Selvaraju*

49. Book Title: "Materials Technology for the Energy and Environmental Nexus, Volume 1 Chapter Title: "Hierarchical Nanostructured Functional Materials for Flexible Supercapacitors"

IOP Publishing Ltd, Bristol, UK Sept, 2023, Chapter VI, Pages (6-1 to 6-29) (September 2023)
A. Gowrisankar, K. Sureka, T. Selvaraju*

48. Interfacial charge separation of nickel tungstate anchored on g-C3N4 heterojunction stimulates visible-light-driven direct Z-scheme photoelectrochemical hydrogen evolution

Int. J. Hydrog. Energy 48 (2023) 26221-26237 (August 2023)
Sathiya Bama Sundararaj, H. Amir, Viswanathan Chinnusamy and Selvaraju Thangavelu*

47. A single-step synthesis of hexagonal Ag nanoplates decorated reduced graphene oxide and its cytotoxicity studies

Oxidative Medicine and Cellular Longevity, 2023 (2023) Article ID 4466394 (July 2023)
Gnanaprakasam Periyasamy1*, Selvaraju Thangavelu2*, Saravanan Muthupandian3*

46. Unraveling the Enhanced Electrochemical Performances of Nickel Aluminum Sulfide Lattices for Overall Water Splitting and as Counter Electrode Material for Dye-Sensitized Solar Cells

J. Phys. Chem. C 127 (2023) 11921-11931 (June 2023)
T. Saravanakumar, S. Sathiya Bama, K.B. Bhojanna, A. Pandikumar, S.J. Sardhar Basha, T. Selvaraju

45. Controlled growth of Sb2S3 nanorods on phosphorous doped reduced graphene oxide for enhanced overall water splitting

New J. Chem. 47 (2023) 9819–9832 (April 2023)
A. Gowrisankar, K. Selvadharshini, Krishnendu M. Nair and T. Selvaraju*

44. Insights into the electrocatalytic oxygen evolution reaction and photocatalytic methylene blue degradation of mixed spinel NixCu1-xFe2O4 nanocomposites anchored at sulfur-doped g-C3N4

J. Phys. Chem. C 127 (2023) 4953?4966 (March 2023)
Sathiya Bama Sundararaj, Selvaraju Thangavelu

43. Electrocatalyst for oxygen evolution reaction and methanol oxidation using surface-oriented stable NiSnO3 nanospheres anchored g-C3N4 nanosheets

Applied Surface Science 612 (2023) 155785. (March 2023)
S. Sathiya Bama, T. Saravanakumar, K.Kadirvelu, Selvaraju Thangavelu*

42. Revealing the Role of Brønsted Basicity by Electrocatalytic Reaction via Li Insertion in MgFe2O4 Lattice

J. Phys. Chem. C 2022, 126, 11915-11926 (July 2022)
Saravanakumar Tamilarasan, S. J. Sardhar Basha*, Sathiya Bama Sundararaj, H. Amir, Viswanathan Chinnusamy and Selvaraju Thangavelu*

41. Layered g-C3N4 stabilized Co2SnO4 inverse spinel as bifunctional electrocatalyst for overall water splitting

Langmuir 2022, 38, 25, 7833–7845 (June 2022)
S. Sathiya Bama, T. Saravanakumar, Selvaraju Thangavelu*

40. ?-MnO2 sensitized SrCO3-Sr(OH)2 supported two dimensional carbon composites as stable electrode material for asymmetric supercapacitor and for oxygen evolution catalysis

ChemElectroChem 9, e202200213 (2022) (1-15) (April 2022)
A.Gowrisankar and T. Selvaraju*

Dr T SELVARAJU , Associate Professor , Department of Chemistry

39. Effect of ?—MnO2 on Controlled Polymorphism of VO2(x) (x=A, B, M polymorphs) Microstructures Anchored on 2D-reduced Graphene Oxide Nanosheets for Overall Water Splitting

J. Phys. Chem. C 126 (2022) 3419-3431 (February 2022)
A. Gowrisankar T. Selvaraju*

38. Hierarchical 2D/2D Interface of Nickel Aluminum Oxide and Nickel Aluminum Layered Double Hydroxide Nanoflowers: An Efficient and Robust Electrocatalyt for Overall Water Splitting

Electrochim. Acta 392 (2021) 139039 (October 2021)
T. Saravanakumar, S. Sathiya Bama, T. Selvaraju*, S.J. Sardhar Basha

37. Anchoring ? MnO2 within ? NiCo(OH)2 as an Interfacial Electrode Material for Boosting Power Density in an Asymmetric Supercapacitor Device and for Oxygen Evolution Catalysis

Langmuir 37 (2021) 5964–5978 (May 2021)
Aruchamy Gowrisankar and Thangavelu Selvaraju*

36. Book Title: Disposable Electrochemical Sensors for Healthcare Monitoring: Materials Properties & Design Chapter Title: "Metal-Organic Framework-based Disposable Sensors"

RSC, 2021, Chapter-VIII, 232-264 (April 2021)
P. Gnanaprakasam, N. S. K. Gowthaman, P. Arul, R. V. Mangalaraja, S. Abraham John and T. Selvaraju*

35. Hexacyanoferrate complex derived NiFe2O4/CoFe2O4heterostructures-MWCNTs for efficient oxygen evolution reaction

Energy & Fuels 35 (2021) 5372–5382 (March 2021)
T. Saravanakumar, S. Sathiya Bama,T. Selvaraju,*and S. J. Sardhar Basha

34. In situ integrated 2D reduced graphene oxide nanosheets with MoSSe for hydrogen evolution reaction and supercapacitor application

Applied Surface Science Advances 3 (2021) 100054 (March 2021)
A. Gowrisankar, J. Antonette Luciana Sherryn, T. Selvarajua

33. One pot in situ synthesis of nano Au?Pd core-shells embedded on reduced graphene oxide for the oxygen reduction reaction

Mater. Sci. Eng. B 264 (2021) 114924 (February 2021)
P. Gnanaprakasam, A. Gowrishankar, S. Senthil Kumar, A. Murugadoss and T. Selvaraju*, R.V. Mangalaraja

32. Visible light sensitive hexagonal boron nitride (hBN) decorated Fe2O3 photocatalyst for the degradation of methylene blue

Journal of Materials Science: Materials in Electronics 32 (2021) 4766–4783 (January 2021)
A. Sakunthala, Manjula R Shenoy, B. Vidhya, S. Rajesh, R. Nandhakumar, P. Senthil Kumar, M. Sasikumar, K. Govindan, T. Saravanakumar, T. Selvaraju, J. Suryakanth, M. V. Reddy, Venkatashamy Reddy

31. Book Title: Nanostructured, Functional and Flexible Materials for Energy Conversion and Storage Systems, Chapter Title: "Graphene-based composite materials for flexible supercapacitors"

Elsevier, 2020, Chapter-XI, 345-372 (November 2020)
A. Gowrisankar, T. Saravanakumar and T. Selvaraju*

30. The effect of morphology dependent surface charges of iron oxide on the visible light photocatalytic degradation of methylene blue dye

Journal of Materials Science: Materials in Electronics, 31 (2020) 17703–17717 (September 2020)
A. Sakunthala, J. Arout Chelvane, K. Govindan, M.V. Reddy, T. Selvaraju, Manjula.R. Shenoy, T. Saravanakumar, Stefan Adams

29. Bifunctional CoSn(OH)6/MnO2 composite for solid-state asymmetric high power density supercapacitor and for an enhanced OER

Electrochim. Acta, 344 (2020) 136141 (June 2020)
A.Gowrisankar and T. Selvaraju*

Dr T SELVARAJU , Associate Professor , Department of Chemistry

28. Exploring the Synergistic effect of NixSn2xS4x Thiospinel with MWCNTs by the Enhanced Performance at Dye Sensitized Solar cells, Hydrogen Evolution Reaction and as Supercapacitor

Dalton Trans., 49 (2020) 5336-5351 (March 2020)
T. Saravanakumara, T. Selvarajub*, K.B. Bhojanaac, M. Rameshc, A. Pandikumarb, R. Akiland, R. Shankard, and S.J. Sardhar Bashaa*

27. Impact of morphological variation by phase oriented MnO2 based hierarchical ternary composites for the fabrication of solid state symmetric supercapacitor

Ionics 26 (2020) 2563-2579 (December 2019)
A. Gowrisankar, J. Antonette Luciana Sherryn, T. Selvaraju*

26. Preparation and characterization of porous iron oxide dendrites for photocatalytic application

Solid State Sciences 95 (2019) 105939 (September 2019)
A. Sakunthala, J. Arout Chelvane, K. Govindan, M.V. Reddy, T. Selvaraju, Manjula.R. Shenoy, T. Saravanakumar, Stefan Adams

25. Enhanced electrocatalytic and photocatalytic activity of ball milled copper tin sulphide by incorporating GO and rGO

Applied Surface Science 484 (2019) 265-275 (August 2019)
V.Maheskumar, I. Sheebha, B. Vidhya, J.P. Deebasree, T. Selvaraju, and Akashkrishnan

24. Exploring the corrosion inhibition of magnesium by coatings Formulated with nano CeO2 and ZnO particles

Progress in Organic Coatings, 129 (2019) 32-42 (April 2019)
T. Saravanakumar, V. Kavimani, K. Soorya Praksh and T. Selvaraju*

23. Influence of solvent in solvothermal synthesis of Cu3SnS4: morphology and band gap dependant electrocatalytic hydrogen evolution reaction and photocatalytic dye degradation

International Journal of Hydrogen energy 43 (2018) 22861-22873 (December 2018)
V. Maheskumar, T. Selvaraju and B. Vidya

22. Investigation on the electrocatalytic activity of hierarchical flower like architectured Cu3SnS4 for hydrogen evolution reaction

Journal of Electroanalytical Chemistry 826 (2018) 38-45 (October 2018)
V. Maheskumar, P. Gnanaprakasam, T. Selvaraju and B. Vidya

21. Comparative studies on the electrocatalytic hydrogen evolution property of Cu2SnS3 and Cu4SnS4 ternary alloys prepared by solvothermal method

International Journal of Hydrogen energy 43 (2018) 3967-3975 (February 2018)
V. Maheskumar, P. Gnanaprakasam, T. Selvaraju and B. Vidya

20. Unusual attempt of architecturing the direct growth of Pt by electroless Cu exchange at bimetallic Ag@Cu nanorods on electrochemically reduced graphene oxide nanosheets for an efficient alcohol oxidation

Journal of Nanoparticle Research 19 (2017) 1-13 (November 2016)
S.E. Jeena, P. Gnanaprakasam and T. Selvaraju*

19. Electroreduction of nitroaromatic compounds at electrochemically reduced graphene oxide supported bimetallic Ag@Pd nanorods modified electrodes

Electroanalysis 28 (2016) 1984-1991 (April 2016)
S.E. Jeena, P. Gnanaprakasam and T. Selvaraju*

18. Simple and robust green synthesis of Au NPs on reduced graphene oxide for the simultaneous detection of toxic heavy metal ions and bioremediation using bacterium as the scavenger

Electroanlaysis 28 (2016) 1885-1893 (March 2016)
P. Gnanaprakasam, S.E. Jeena, D. Premnath and T. Selvaraju*

17. Facile growth of Ag@ Pt bimetallic nanorods on electrochemically reduced graphene oxide for an enhanced electrooxidation of hydrazine

Journal of Chemical Sciences 128 (2016) 357-363 (February 2016)
S. E. Jeena and T. Selvaraju*

Dr T SELVARAJU , Associate Professor , Department of Chemistry

16. Synergistic effect of bimetallic Ag@Cu nanorods modified electrode for enhanced electrochemical sensing of thiocyanate ions

Research on Chemical Intermediate 42 (2016) 2539-2551 (July 2015)
S.E. Jeena, P. Gnanaprakasam and T. Selvaraju*

15. Hierarchical Electroless Pt Deposition at Au Decorated Reduced Graphene Oxide via Galvanic Exchanged Process: Electrocatalytic Nanocomposite with Enhanced Mass Activity for Methanol and Ethanol Oxidation

J. Mat. Chem. A, 3 (2015) 18010–18018 (July 2015)
P. Gnanaprakasam, Jeena Susan Easow and T. Selvaraju*

14. Tuning the direct growth of Agseeds into bimetallic Ag@Cu nanorods on surface functionalized electrochemically reduced graphene oxide: Enhanced nitrite detection

RSC Advances 5 (2015) 48236–48245 (May 2015)
S.E. Jeena, P. Gnanaprakasam, D. Arun and T. Selvaraju*

13. Green synthesis of self-assembled silver nanowires decorated reduced graphene oxide for efficient nitroarenes reduction

RSC Advances 4 (2014) 24518–24525 (May 2014)
P. Gnanaprakasam and T. Selvaraju*

12. Signal amplification of dopamine using lanthanum hexacyanoferrate modified electrode

Journal of Chemical Sciences 126 (2014) 11–16 (February 2014)
T. Selvaraju* and R. Ramaraj

11. Unzipped catalytic activity of copper in realizing bimetallic Ag@Cu nanowires as a better amperometric H2O2 sensor

Electrochimica Acta 112 (2013) 648–654 (December 2013)
Jeena Susan Easow and T. Selvaraju*

10. Electrocatalytic reduction of hydrogen peroxide at copper nanoparticles coated glassy carbon electrode

Journal of Applied Electrochemistry 39 (2009) 321–327 (October 2008)
T. Selvaraju and R. Ramaraj

9. Electrochemical and in situ spectroelectrochemical studies of gold nanoparticles Immobilized Nafion matrix modified electrode

Bulletin of Materials Science 31 (2008) 487–494 (September 2008)
T. Selvaraju, S. Sivagami, S. Thangavel and R. Ramaraj

8. Nanocatalyst-Based Assay Using DNA-Conjugated Au Nanoparticles for Electrochemical DNA Detection

Langmuir 24 (2008) 9883–9888 (August 2008)
T. Selvaraju, J. Das, K. Jo, K. Kwon, C.-H. Huh, T.K. Kim and H. Yang

7. Ultrasensitive electrochemical immunosensing using magnetic beads and gold nanocatalysts

Biosensors and Bioelectronics 23 (2008) 932–938 (February 2008)
T. Selvaraju, J. Das, S. W. Han, and H. Yang

6. Selective determination of catechol in the presence of hydroquinone at bare indium tin oxide electrodes via peak-potential separation and redox cycling by hydrazine

Electroanalysis19 (2007) 1543–1546 (July 2007)
Md. A. Aziz, T. Selvaraju and H. Yang

5. Simultaneous detection of ascorbic Acid, uric Acid and homovanillic Acid at copper modified electrode

Electrochim. Acta 52 (2007) 2998–3005 (February 2007)
T. Selvaraju and R. Ramaraj

4. Electrochemically deposited nanostructured platinum on Nafion coated electrode for sensor applications

Journal of Electroanalytical Chemistry, 585 (2005) 290–300 (November 2005)
T. Selvaraju and R. Ramaraj

3. Nanostructured copper particles-incorporated Nafon-modified electrode for oxygen reduction

Pramana – Journal of Physics, 65 (2005) 713–722 (October 2005)
T. Selvaraju and R. Ramaraj

2. Simultaneous determination of ascorbic acid, dopamine and serotonin at poly(phenosafranine) modified electrode

Electrochemistry Communication, 5 (2003) 667–672 (August 2003)
T. Selvaraju and R. Ramaraj

1. Simultaneous determination of dopamine and serotonin in the presence of ascorbic acid and uric acid at poly(o-phenylenediamine) modified electrode

Journal Applied Electrochemistry, 33 (2003) 759–762 (August 2003)
T. Selvaraju and R. Ramaraj

Patents

Granted - 1

1. SPINEL TYPE TERNARY METAL CHALCOGENIDES-BASED CRYSTAL LATTICES AND THEIR PROCESS THEREOF 08-2023 445351 / 202141049061 Dr. T. SELVARAJU, T. SARAVANAKUMAR,.Dr. S. J. SARDHAR BASHA

Filed - 1

1. Spray pyrolysis coating of nickel foam with activated carbon derived from banana peel waste for efficient textile industrial effluent degradation via electrocoagulation and related processes 01-1970 / 202341066804 Dr. T. SELVARAJU,, S. GOWTHAMAN

Projects

Completed - 5

1. Synthesizing Functionalized Biocompatible core-shell nanoparticles for potential applications DST – SERB 2530000 (May 2012 - December 2015)

2. Hybrid Reduced Graphene Oxide Supported Bimetallic Porous Nanostructures Syntheses and its Applications DST – SERB 3259700 (April 2016 - December 2019)

3. Development & Commercialization of High Tensile Strength Bioplastics RUSA 2.0 - BEICH 600000 (January 2020 - June 2021)

4. Synthesis and application of anticancer compounds RUSA 2.0 - BCTRC 743000 (January 2021 - December 2022)

5. Design and Development of Low cost Electrocoagulation Batch Reactor System for Efficient Industrial Effluent Treatment TANSCHE 8758500 (June 2021 - October 2024)