

Name of the Faculty: Dr. P.Tamizhdurai, M.Sc., Ph.D., PGDCA

Designation: Assistant Professor

Contact no: 9677146579, 7871174009

E-mail id: tamizhvkt2010@gmail.com

Specialization: [Inorganic chemistry](#)

[Postgraduate and Research Department of](#)

[Chemistry, D.G. Vaishnav College,#833, E.V.R.](#)

[Periyar Highroad, Arumbakkam, Chennai 600106 Tamilnadu, India.](#)

ACHIEVEMENTS

Dr.P.Tamizhdurai has completed his B.Sc General Chemistry in 2011 and M.Sc General Chemistry in 2013 at University of Madras (Ramakrishna mission Vivekananda college – Autonomous) with First Classes. He has completed his Ph.D in Chemistry (specialization: catalysis) from Anna university in Co-ordination with National Centre for catalysis Research (NCCR), Indian institute of technology (IIT-Madras) 2020 under JRF fellowship of UGC. And he has completed his PDF Research Fellow Department of Civil Engineering Indian Institute of Technology Madras Chennai India December 2020. He have published **45 Research Articles** on SCI Indexed Journals, **Five Indian and US patent** also filing laboratory and presented **60 in international/national conferences**. He has been awarded Minor research project **Carbon Zero Challenge** by IIT Madras worth **5 lakhs** which will be completed in the year 2020. He has started his carrier as assistant professor in Department of Chemistry in D.G. Vaishnav college Chennai February 2021. Also, he has reviewer of Elsevier Journals, American Chemical Society (ACS), and Royal Society of Chemistry (RSC) journals.

He have well experience in different high-pressure reactors (Batch Reactor - Parr Instruments and High-pressure Fixed bed reactors – Xytel Engineering India LTD.) and handled highly hazardous chemicals based on processes with high safety record. I have also proficiency in several analytical and characterization techniques including BET surface area analysis, Chemisorption/ TPD/TPR/TPO, XRD, XPS spectra, TGA-DTA, GC-MS, FTIR, GC, HPLC, elemental analysis and instrumentation troubleshooting. Particularly I have well analytical experience in handling different Gas chromatograph (Chemito, PerkinElmer, Agilent and

Mayura Analytical Instruments) and Shimadzu HPLC with the knowledge of calibration procedure.

Research Fellow: (Project Completed)

National Centre for Catalysis Research (NCCR), Department of Chemistry, Indian Institute of Technology, Madras (IITM), February. 2014- December 2020, Completed Projects.

1.Project Name: INVESTIGATIONS ON NOVEL CATALYSTS BASED ON SUPERACIDIC AND MICRO-MESOPOROUS MATERIALS FOR ISOMERIZATION OF LIGHT NAPHTHA FOR OCTANE IMPROVEMENT-CPCL PROJECT. Project Coordinator - **Prof. S. Sivasanker**[15 Lakhs Completed 2016].

2.Project Name: DEVELOPMENT OF CATALYST/PROCESS FOR TRI-REFORMING OF NATURAL GAS -HPCL PROJECT. Project Coordinator - **Prof. S.Sivasanker** [30 Lakhs Completed 2017].

3.Project Name: DEVELOPMENT OF JP-10 THROUGH HYDROGENATION & ISOMERIZATION -DRDO –PROJECT. Project Coordinator - **Prof. P. Selvam** [30 Lakhs Completed 2018].

4.Project Name: PAPER BASED ANALYTICAL DEVICE FOR MONITORING PESTICIDE RESIDUES IN FRUITS/VEGETABLES. Project Coordinator – **Assist Prof. P. Tamizhdurai** [5 Lakhs Completed 2020].

.

SUMMARY OF QUALIFICATIONS AND SKILL SETS

- Ph.D in Chemistry (specialization: catalysis) from **Anna university** in Co-ordination with National Centre for catalysis Research (NCCR), **Indian institute of technology (IIT-Madras)**.
- Holds a strong command on chemistry and material science. Hands on experience in catalyst development
- Strongly believe in **safety** and **hypothesis driven experiments**. Demonstrated technical leadership/management skills to perform in multinational environment
- **Organized, take-charge professional** with exceptional follow through abilities and detail orientation;
- Strong working experience with cross-functional scientific and research team. **Ability to work with dedication and integrity**; Eager to accept and complete the challenging task and demonstrate project management skills.

INDIAN AND US PATENT PUBLICATION [8]

1. **P.Tamizhdurai**, S.Sivasanker, M.Lavanya and V. Venkatesan “CATALYST AND PROCESS FOR THE PRODUCTION OF EXO-TETRAHYDRODICYCLOPENTADIENE”Indian patent communication (2017) “Patent numbers; **ERIP/201811047251** filed on 13-12-2018.
2. **P.Tamizhdurai**, S.Sivasanker, M.Lavanya and V. Venkatesan “CATALYST AND PROCESS FOR THE PRODUCTION OF HIGH ENERGY DENSITY FUEL JP-10”Indian patent communication (2017) “Patent numbers; **ERIP/201811047506** filed on 14-12-2018.
3. **P.Tamizhdurai**, S. Sivasanker, M.Lavanya, k.Shanthi, and A. Meenakshisundaram “A CATALYST COMPOSITE USING MESOPOROUS MATERIAL SUPPORTED IONIC LIQUIDS FOR ISOMERIZATION OF ALKANES”Patent numbers; **R20184002532** filed on 25-01-2018.
4. V L Mangesh, **P Tamizhdurai**, “PRODUCTION OF DIESEL ENGINE FUEL FROM MIXED WASTE PLASTIC BY UTILIZING $\text{Pt/Al}_2\text{O}_3$ AS THE HYDROPROCESSING CATALYST”, (**Patent filed with US patent office on**

18/02/2020).

5. V L Mangesh, **P Tamizhdurai**, “Production of diesel engine fuel from mixed waste plastics by utilizing La/Ni/SO₄/ZrO₂-SBA-15 as the hydrotreatment catalyst”, (Patent filed with US patent office on 04/12/2019 and Application Number **US09114350S1**).
6. V L Mangesh, **P Tamizhdurai**, “Process of producing catalytic pyrolysis oil from waste polypropylene plastic and upgrading it to diesel engine fuel through hydrotreatment using Ni-Pt/ZrO₂ catalyst”, (Patent filed with US patent office on 04/12/2019 and Application Number: **US65890727R9**).
7. V L Mangesh, **P Tamizhdurai**, “Process of producing diesel fuel by pyrolysis of waste polypropylene plastic and subsequent catalytic hydrotreatment by using Ni/SBA-15 catalyst”, (Patent filed with US patent office on 26/08/2019 and Application Number: **US34901456Q1**).
8. V L Mangesh, **P Tamizhdurai**, S Padmanabhan, “Process of conversion of waste polypropylene plastic to diesel engine fuel by catalytic hydrotreatment using Ni/H-beta catalyst”, (Patent filed with US patent office on 26/08/2019 and Application Number: **US12090117A1**).

NATIONAL AND INTERNATIONAL PAPER PUBLISHED [45]

- [1] S. Narayanan, J.J. Vijaya, S. Sivasanker, M. Alam, **P. Tamizhdurai**, L.J. Kennedy, Characterization and catalytic reactivity of mordenite – Investigation of selective oxidation of benzyl alcohol, *Polyhedron*, 89 (2015) 289-296.
- [2] S. Sakthinathan, S. Kubendhiran, S.M. Chen, K. Manibalan, M. Govindasamy, **P. Tamizhdurai**, S.T. Huang, Reduced Graphene Oxide Non-covalent Functionalized with Zinc Tetra Phenyl Porphyrin Nanocomposite for Electrochemical Detection of Dopamine in Human Serum and Rat Brain Samples, *Electroanalysis*, 28 (2016) 2126-2135.
- [3] S. Sakthinathan, S. Kubendhiran, S.-M. Chen, Fahad M.A. Al-Hemaid, W.C. Liao, **P. Tamizhdurai**, S. Sivasanker, M. Ajmal Ali, A.A. Hatamleh, A non-covalent interaction of Schiff base copper alanine complex with green synthesized reduced graphene oxide for highly selective electrochemical detection of nitrite, *RSC Advances*, 6 (2016) 107416-107425.

- [4] S. Sakthinathan, S. Kubendhiran, S.-M. Chen, **P. Tamizhdurai**, Reduced graphene oxide/gold tetraphenyl porphyrin (RGO/Au–TPP) nanocomposite as an ultrasensitive amperometric sensor for environmentally toxic hydrazine, *RSC Advances*, 6 (2016) 56375-56383.
- [5] S. Sakthinathan, H.F. Lee, S.M. Chen, **P. Tamizhdurai**, Electrocatalytic oxidation of dopamine based on non-covalent functionalization of manganese tetraphenylporphyrin/reduced graphene oxide nanocomposite, *J. Colloid Interface Sci.*, 468 (2016) 120-127.
- [6] S. Kubendhiran, S. Sakthinathan, S.M. Chen, **P. Tamizhdurai**, K. Shanthi, C. Karuppiah, Green reduction of reduced graphene oxide with nickel tetraphenyl porphyrin nanocomposite modified electrode for enhanced electrochemical determination of environmentally pollutant nitrobenzene, *J. Colloid Interface Sci.*, 497 (2017) 207-216.
- [7] S. Sakthinathan, S. Kubendhiran, S.-M. Chen, M. Govindasamy, F.M.A. Al-Hemaid, M. Ajmal Ali, **P. Tamizhdurai**, S. Sivasanker, Metallated porphyrin noncovalent interaction with reduced graphene oxide-modified electrode for amperometric detection of environmental pollutant hydrazine, *Appl. Organomet. Chem.*, 31 (2017).
- [8] **P. Tamizhdurai**, M. Lavanya, A. Meenakshisundaram, K. Shanthi, S. Sivasanker, Isomerization of Alkanes Over Pt-Sulphated Zirconia Supported on SBA-15, *Advanced Porous Materials*, 5 (2017) 169-174.
- [9] **P. Tamizhdurai**, S. Sakthinathan, S.M. Chen, K. Shanthi, S. Sivasanker, P. Sangeetha, Environmentally friendly synthesis of CeO₂ nanoparticles for the catalytic oxidation of benzyl alcohol to benzaldehyde and selective detection of nitrite, *Sci Rep*, 7 (2017) 46372.
- [10] **P. Tamizhdurai**, P.S. Krishnan, A. Ramesh, K. Shanthi, Isomerization of hydrocarbons over Pt supported on micro-mesoporous ZSM-5, *Polyhedron*, 154 (2018) 314-324.
- [11] **P. Tamizhdurai**, S. Sakthinathan, P.S. Krishnan, A. Ramesh, A. Abilarasu, V.L. Mangesh, S. Narayanan, K. Shanthi, T.-W. Chiu, Highly selective oxidation of benzyl alcohol over Pt-sulphated zirconia supported on SBA-15 catalyst by using a high-pressure fixed bed reactor, *Polyhedron*, 155 (2018) 390-397.
- [12] P.S. Krishnan, **P. Tamizhdurai**, A. Alagarasi, K. Shanthi, Vapour phase hydrodeoxygenation of furfural into fuel grade compounds on NiPMoS catalyst: Synergetic effect of NiP and laponite support, *Int. J. Hydrogen Energy*, 44 (2019) 14968-14980.

- [13] A. Ramesh, M. Neelaveni, **P. Tamizhdurai**, R. Ramya, N. Sasirekha, K. Shanthi, Facile synthesis of poly (benzylamine) brushes stabilized silver nanoparticle catalyst for the abatement of environmental pollutant methylene blue, *Mater. Chem. Phys.*, 229 (2019) 421-430.
- [14] A. Ramesh, K. Palanichamy, **P. Tamizhdurai**, S. Umasankar, K. Sureshkumar, K. Shanthi, Sulphated Zr–Al₂O₃ catalysts through jatropa oil to green-diesel production, *Mater. Lett.*, 238 (2019) 62-65.
- [15] A. Ramesh, **P. Tamizhdurai**, S. Gopinath, K. Sureshkumar, E. Murugan, K. Shanthi, Facile synthesis of core-shell nanocomposites Au catalysts towards abatement of environmental pollutant Rhodamine B, *Heliyon*, 5 (2019) e01005.
- [16] A. Ramesh, **P. Tamizhdurai**, V.L. Mangesh, K. Palanichamy, S. Gopinath, K. Sureshkumar, K. Shanthi, Mg/SiO₂–Al₂O₃ supported nickel catalysts for the production of naphthenic hydrocarbon fuel by hydro-de-oxygenation of eugenol, *Int. J. Hydrogen Energy*, 44 (2019) 25607-25620.
- [17] A. Ramesh, **P. Tamizhdurai**, K. Shanthi, Catalytic hydrodeoxygenation of jojoba oil to the green-fuel application on Ni-MoS/Mesoporous zirconia-silica catalysts, *Renewable Energy*, 138 (2019) 161-173.
- [18] A. Ramesh, **P. Tamizhdurai**, K. Suthagar, K. Sureshkumar, G.S. Theres, K. Shanthi, Intrinsic role of pH in altering catalyst properties of NiMoP over alumino-silicate for the vapour phase hydrodeoxygenation of methyl heptanoate, *New J. Chem.*, 43 (2019) 3545-3555.
- [19] S. Sakthinathan, T. Kokulnathan, S.-M. Chen, R. Karthik, **P. Tamizhdurai**, T.-W. Chiu, K. Shanthi, Simple Sonochemical Synthesis of Cupric Oxide Sphere Decorated Reduced Graphene Oxide Composite for the Electrochemical Detection of Flutamide Drug in Biological Samples, *J. Electrochem. Soc.*, 166 (2019) B68-B75.
- [20] K. Sivagami, V. Jaa Vignesh, **P. Tamizhdurai**, B. Rajasekhar, N. Sakthipriya, I.M. Nambi, Studies on short term weathering of spilled oil along Chennai coast in South India, *Journal of Cleaner Production*, 230 (2019) 1410-1420.
- [21] **P. Tamizhdurai**, A. Ramesh, P.S. Krishnan, V.L. Mangesh, S. Umasankar, S. Narayanan, C. Ragupathi, K. Shanthi, Hydrogenation of dicyclopentadiene into endo-tetrahydrodicyclopentadiene over supported different metal catalysts, *Microporous Mesoporous Mater.*, 290 (2019).

- [22] **P. Tamizhdurai**, A. Ramesh, P.S. Krishnan, S. Narayanan, K. Shanthi, S. Sivasanker, Effect of acidity and porosity changes of dealuminated mordenite on n-pentane, n-hexane and light naphtha isomerization, *Microporous Mesoporous Mater.*, 287 (2019) 192-202.
- [23] **P. Tamizhdurai**, S. Sakthinathan, P. Santhana Krishnan, A. Ramesh, V.L. Mangesh, A. Abilarasu, S. Narayanan, K. Shanthi, T.-W. Chiu, Catalytic activity of ratio-dependent SBA-15 supported zirconia catalysts for highly selective oxidation of benzyl alcohol to benzaldehyde and environmental pollutant heavy metal ions detection, *J. Mol. Struct.*, 1176 (2019) 650-661.
- [24] P.S. Krishnan, **P. Tamizhdurai**, G.S. Theres, K. Shanthi, Molybdenum hybrid – Nanocrystals supported on modified Laponite composite as superior catalyst for vapour phase hydrodeoxygenation of clove oil, *Renewable Energy*, 148 (2020) 451-466.
- [25] V.L. Mangesh, S. Padmanabhan, **P. Tamizhdurai**, S. Narayanan, A. Ramesh, Combustion and emission analysis of hydrogenated waste polypropylene pyrolysis oil blended with diesel, *J. Hazard. Mater.*, 386 (2020) 121453.
- [26] V.L. Mangesh, S. Padmanabhan, **P. Tamizhdurai**, A. Ramesh, Experimental investigation to identify the type of waste plastic pyrolysis oil suitable for conversion to diesel engine fuel, *Journal of Cleaner Production*, 246 (2020).
- [27] V.L. Mangesh, **P. Tamizhdurai**, S. Subramanian, S. Padmanabhan, Clean Energy from Plastic: Production of Hydroprocessed Waste Polypropylene Pyrolysis Oil Utilizing a Ni–Mo/Laponite Catalyst, *Energy & Fuels*, 34 (2020) 8824-8836.
- [28] V.L. Mangesh, **P. Tamizhdurai**, P. Santhana Krishnan, S. Narayanan, S. Umasankar, S. Padmanabhan, K. Shanthi, Green energy: Hydroprocessing waste polypropylene to produce transport fuel, *Journal of Cleaner Production*, 276 (2020).
- [29] S. Nehru, S. Sakthinathan, **P. Tamizhdurai**, T.W. Chiu, K. Shanthi, Reduced Graphene Oxide/Multiwalled Carbon Nanotube Composite Decorated with Fe(3)O(4) Magnetic Nanoparticles for Electrochemical Determination of Hydrazine in Environmental Water, *J Nanosci Nanotechnol*, 20 (2020) 3148-3156.
- [30] **P. Tamizhdurai**, V.L. Mangesh, S.K. Perumal, R. Arumugam, N. Subramanian, S. Subramanian, S. Kannan, Isomerization of Alkanes over Ionic Liquids Supported on SBA-15, *Energy & Fuels*, 34 (2020) 14620-14632.

- [31] A. Ramesh, **P. Tamizhdurai**, P. Santhana Krishnan, V. Kumar Ponnusamy, S. Sakthinathan, K. Shanthi, Catalytic transformation of non-edible oils to biofuels through hydrodeoxygenation using Mo-Ni/mesoporous alumina-silica catalysts, *Fuel*, 262 (2020).
- [32] S. Sakthinathan, **P. Tamizhdurai**, A. Ramesh, T.-W. Chiu, V.L. Mangesh, S. Veerarajan, K. Shanthi, Platinum incorporated mordenite zeolite modified glassy carbon electrode used for selective electrochemical detection of mercury ions, *Microporous Mesoporous Mater.*, 292 (2020).
- [33] S. Sakthinathan, K. Thagavelu, **P. Tamizhdurai**, T.W. Chiu, Activated Graphite Supported Tunable Au-Pd Bimetallic Nanoparticle Composite Electrode for Methanol Oxidation, *J Nanosci Nanotechnol*, 20 (2020) 6376-6384.
- [34] P. Santhana Krishnan, M. Neelaveni, **P. Tamizhdurai**, M. Mythily, S. Krishna Mohan, V.L. Mangesh, K. Shanthi, CO_x-free hydrogen generation via decomposition of ammonia over Al, Ti and Zr-Laponite supported MoS₂ catalysts, *Int. J. Hydrogen Energy*, 45 (2020) 8568-8583.
- [35] **P. Tamizhdurai**, R. Rajakumaran, S. Sakthinathan, S.M. Chen, T.-W. Chiu, S. Narayanan, Highly sensitive detection of environmental pollutant cadmium with ultrasonic irradiated Pt-supported ZSM-5 modified electrode, *Microporous Mesoporous Mater.*, 307 (2020).
- [36] S. Umasankar, **P. Tamizhdurai**, P. Santhana Krishnan, S. Narayanan, V.L. Mangesh, K. Shanthi, Effect of copper on NiCu bimetallic catalyst supported on SBA-16 for the catalytic hydrogenation of 5-hydroxymethylfurfural to 2,5-dimethylfuran, *Biomass Bioenergy*, 143 (2020).
- [37] P.S. Krishnan, S. Umasankar, **P. Tamizhdurai**, V.L. Mangesh, K. Shanthi, Liquid phase hydrodeoxygenation of furfural over laponite supported NiPMoS nanocatalyst: Effect of phosphorus addition and laponite support, *J. Solid State Chem.*, 297 (2021).
- [38] S. Narayanan, **P. Tamizhdurai**, V.L. Mangesh, C. Ragupathi, P. Santhana Krishnan, A. Ramesh, Recent advances in the synthesis and applications of mordenite zeolite – review, *RSC Advances*, 11 (2021) 250-267.
- [39] K. Sivagami, **P. Tamizhdurai**, S. Mujahed, I. Nambi, Process optimization for the recovery of oil from tank bottom sludge using microwave pyrolysis, *Process Safety and Environmental Protection*, 148 (2021) 392-399.
- [40] S. Narayanan, **P. Tamizhdurai**, V.L. Mangesh, A. Ramesh, Recent advances in the synthesis and applications of mordenite zeolite – Review, *RSC Advances* 11(2020)(1):250-267.

- [41] C. Ragupathi, S. Narayanan, **P. Tamizhdurai**, Mani Govindasamy, Zeid A. ALothman, Murefah mana AL-Anazy, Tuning magnetic, electronic, and optical properties of Mn-doped NiCr₂O₄ via microwave method, *Journal of Saudi Chemical Society*, Available online 7 June 2021, 101275.
- [42] **P. Tamizhdurai**, A. Abilarasu, S. Narayanan, C. Ragupathi, Mani Govindasamy, Ayman A. Ghfar, Murefah mana AL-Anazy, Mohamed Ouladsmene, Effect of modified zeolite beta in the hydrogenation of anisole and acetophenone reaction, *Journal of Porous Materials*, Accpeted 2021.
- [43] **P. Tamizhdurai**, S. Narayanan, Mani Govindasamy, Zeid A. ALothman, Murefah mana AL-Anazy, Effect of modified zeolite beta (dealumination, desilication and ion-exchange) in the Friedel-Crafts acylation reaction, *Microporous and Mesoporous Materials*, Accpeted 2021.
- [44] S. Umasankara, P. Santhana Krishnana , G. Sonia Theresa , **P. Tamizhduraia**, K. Shanthia, Liquid phase hydrogenation of furfural to biofuel over robust NiCu/Laponite catalyst: A study on the role of copper loading, *Advance Powder Technology*, Accpeted 2021.
- [45] **P. Tamizhdurai**, A. Abilarasu, S. Narayanan, C. Ragupathi, Mani Govindasamy, Ayman A. Ghfar, Murefah mana AL-Anazy, Mohamed Ouladsmene, Effect of modified zeolite beta in the hydrogenation of anisole and acetophenone reaction, *Journal of Porous Materials*, Accpeted 2021.

NATIONAL AND INTERNATIONAL WORKSHOPS & CONFERENCE ATTENDED [16]

- Attended “**DST Orientation program for Research Scholars in Catalysis**” at National Center for Catalysis Research, Department of Chemistry, IIT Madras, Chennai, India from November 30th to December 17th – 23rd 2007.
- Attended international conference poster “**APCAT-7 Asia-pacific congress on catalysis**” at Hotel the lalit, Mumbai, india form January 17-21, 2017.
- Attended international conference oral presentation “**APCAT-7 Asia-pacific congress on catalysis**” at Hotel the lalit, Mumbai, india form January 17-21, 2017.
- Attended international conference “**Energy innovation-today and tomorrow**” at Hindustan Petroleum Corporation Limited, Bengaluru, india, from October 14-15, 2016.
- Attended international conference “**Emerging environmental and advanced oxidation technologies for energy, Environment and Sustainability**” at Anna university, Chennai, India, form September 29th-30th ,2014.

- Attended national conference “[Theme meeting on Recent trends in materials chemistry](#)” VIT, university, from July 25th-27th, 2013.
- “[The Application of chemistry in medicine](#)” seminar on Feb. 2011 conducted by the department of chemistry, S.D.N.B.Vaishnav College for women, Chrompet, Chennai-600 044.
- “Research Trends [In Chemical Research](#)” a one day national seminar conducted by A.M. Jain College, meenambakkam Chennai-114 on 16th December 2011.
- National Seminar on “[Thrust Area in Chemistry](#)” (STAC-2012) held at the Government Arts College, Nandanam, Chennai-600 035 on 16th February, 2012.
- National seminar on “[Emerging Trends In Chemical Research](#)” organized by the A.M.Jain College, Meenambakkam, Chennai-114 & Society For Advancement of Chemical science And Education (SACSE), Radiochemistry laboratory, IGCAR, Kalpakkam on March 2013.
- [Integrated Training in Analytical Techniques](#) held at Ramakrishna mission Vivekananda college Chennai-2011.
- Nano Revelation-2012 on theme “[Nano Medicine](#)” organized by science city on 17th August, 2012.

Research Field: Heterogeneous Catalysis, Isomerization, Adsorption, Metal Oxides, Zeolites, Selective Oxidation, Biomass Conversion, Plastic Pyrolysis to Diesel Fuel, Hydrogenation, Ionic Liquid, Electrochemistry.

Yours Sincerely

Dr.P.Tamizhdurai