CSIR-National Environmental Engineering Research Institute (CSIR-NEERI)

Dr. G. SARAVANAN
Senior Scientist

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Academic Background

B. Sc. (Chemistry) (Krishnagiri Arts College, University of Madras, India)
M. Sc. (Physical Chemistry) (University of Madras, India)
M. S (Physical Chemistry) (Shinshu University, Japan)
Ph.D (Physical Chemistry) (Shinshu University, Japan)

Professional Background

Senior Scientist: CSIR-NEERI, Chennai Zonal Centre (June, 2016 – Till date)
Scientist Fellow: CSIR-NEERI, Nagpur (April, 2013 – May 2016)
Research Scientist: Kanagawa University, Japan (Sep, 2012 – March, 2013)
Research Scientist: National Institute for Materials Science (NIMS), Japan (April, 2009 – August, 2012)
Research Associate: Keio University, Japan (April, 2008 – March, 2009)

Area of Scientific Interest

Broad Area: Energy and Environmental remediation Materials

- Development of catalysts for automobile exhaust purification and Indoor air purification

- Development of electrode catalysts for cleaner energy generation using fuel cells
- Water and waste water treatment
- Development of oxygen carriers for carbondioxide capture and sequestration
- Characterization studies of emissions, river sediments, raw-materials for fire crackers
- Expert member for NGT hearings

Awards and Honors

- Monbu-kagakusho Fellow - Ministry of Education, Culture, Sports, Science, and Technology, Japan, 10, 2002 – 03, 2008
- Awarded as "Best Young Scientist" at "International Conference on Applications of Advanced Materials for Sustainable Development" held at Nagpur, India.
- Visiting Scientist – Kanagawa University, Yokohama, Japan.
- Awarded under *Fast Track Scheme* for *Young Scientist*
- *Research Council Member for Tamilnadu Open University*

Publications

1. Pushpalatha Nataraj, Elizabeth Abraham and **Govindachetty Saravanan***
   Pt-Cu Nanoalloy Catalysts: Compositional Dependence and Selectivity for Direct Electrochemical Oxidation of Formic Acid
   New J. Chem., **2022**, 46, 11883

2. N. Pushpalatha, V. Sreeja, R. Karthik, and **G. Saravanan***
   Total Dissolved Solids and their Removal Techniques
   International Journal of Environmental Sustainability and Protection, **2022** (in Press)

3. Rohini Khobragade, **Govindachetty Saravanan,*** Hisahiro Einaga, Hideo Nagashima, Pravesh Shukla, Tarun Gupta, Avinash Kumar Agarwal, Nitin Labhasetwar
   Diesel Fuel Particulate Emission Control using Low-cost Catalytic Materials
   Fuel, **2021**, 302, 121157. IF = 5.578

4. Rohini Khobragade, Pranali Dahake, Nitin Labhsetwar, **Govindachetty Saravanan,***
   PdCu Nanoalloy Catalyst for Preferential CO Oxidation in the Presence of Hydrogen
   New J. Chem., **2021**, *45*, 4246-4252. IF = 3.288

5. Payel Singh, Prabir Pal, Priyanka Mondal, **Govindachetty Saravanan**,
   Penumaka Nagababu, Swachchha Majumdar, Nitin Labhsetwar, Subhamoy Bhowmick,*
   Kinetics and mechanism of arsenic removal using sulfide-modified nanoscale zerovalent iron
   Chem. Eng. J., **2021**, *412*, 128667. IF = 10.652

6. Priscilla Hyacinth Cyril and **Govindachetty Saravanan***
   Advanced Materials Development for Cleaner Energy Generation through Fuel Cells
   New J. Chem., **2020**, *44*, 19977-19995

7. Jayasree K. Pulleri, Sunit Kumar Singh, Divya Yearwar, **Govindachetty Saravanan**, Ahmed Sadeq Al-Fatesh and Nitin K. Labhasetwar,*
   Morphology dependent catalytic activity of Mn_3O_4 for complete oxidation of toluene and carbon monoxide
   Catal Lett., **2020** https://doi.org/10.1007/s10562-020-03278-w

8. Rohini Khobragade, Divya Yearwar, Nitin Labhsetwar, **Govindachetty Saravanan,***
   Alumina Supported Nano-platinum on Copper Nanoparticles Prepared via Galvanic Displacement Reaction for Preferential Carbon Monoxide Oxidation in Presence of Hydrogen
   Int. J. Hydrog. Energy., **2019**, *44*, 28757-28768, IF = 4.939

9. Rohini Khobragade, Hisahiro Einaga, Suman Jain, **Govindachetty Saravanan,*** Nitin Labhsetwar

Sulfur Dioxide-tolerant Strontium Chromate for the Catalytic Oxidation of Diesel Particulate Matter

Catal. Sci. Technol., **2018**, *8*, 1712-1721, IF = 5.773

10. **Govindachetty Saravanan***, K. Pulleri Jayasree, Yearwar Divya, Mungse Pallavi, Labhsetwar Nitin

Ordered Intermetallic Pt-Fe Nano-catalysts for Carbon Monoxide and Benzene Oxidation

Intermetallics, **2018**, *94*, 179-185, IF = 3.140

11. Pallavi B. Mungse, **Govindachetty Saravanan***, Maiko Nishibori, Jan Subrt and Nitin K. Labhsetwar

Solvent-free, Improved Synthesis of Pure Phase of Iron Manganese mixed oxide, Bixbyite as Low-cost, Potential Oxygen Carrier for Chemical Looping with Oxygen Uncoupling

Pure Appl. Chem. **2017** (Accepted), IF = 3.386

12. Jayasree. K. Pulleri, D. Yearwar, **G. Saravanan**, S. Rayalu and Nitin Labhasetwar

Effect of Morphology of Platinum Nanoparticles on Benzene Oxidation Activity

J. Nanosci. Nanotech. **2016** (Accepted), IF = 1.338

13. Sandra Sajen, Sunit Kumar Singh, Pallavi Mungse, Sadhana Rayalu, Kosuke Watanabe, **Govindachetty Saravanan** and Nitin Labhsetwar*

Mechanically Stable Mixed Metal Oxide of Cu and Mn as Oxygen Carrier for Chemical Looping Syngas Combustion

Energy&Fuels, **2016**, *30*, 7596-7603, IF = 2.835

14. **Govindachetty Saravanan***, Rohini Khobragade, Laxmi Chand Nagar, Nitin Labhsetwar

Ordered Intermetallic Pt-Cu Nanoparticles for Catalytic CO Oxidation Reaction

RSC Adv., **2016**, *6*, 85634–85642, IF = 3.289

15. Pallavi Mungse, **Govindachetty Saravanan**,* Sadhana Rayalu and Nitin Labhsetwar*

Mixed Oxides of Fe and Mn as Low-cost, Potential Oxygen Carrier for Chemical Looping Combustion

Energy Technol., **2015,** 8, *3, 856-865.* IF= 2.557, (ISSN: 2194-4296),

16. Nitin Labhsetwar, **Govindachetty Saravanan**, Suresh Kumar Megarajan, Nilesh Manwar, Rohini Khobragade, Pradeep Doggali, Fabien Grasset

Perovskite-type Catalytic Materials for Environmental Applications

Sci. Technol. Adv. Mater, **2015**, 3, *16*, 036002. IF= 3.513 (ISSN: 1878-5514)

17. Takao Gunji, Toyokazu Tanabe, Arockiam John Jeevagan, Sho Usui, Takashi Tsuda, Shingo Kaneko, **Govindachetty Saravanan**, Hideki Abe, Futoshi Matsumoto*

Facile Route for the Preparation of Ordered Intermetallic Pt_3Pb-PtPb Core-Shell Nanoparticles and Its Enhanced Activity for Alkaline Methanol and Ethanol Oxidation

J. Power Sources, **2015,** *273,* 990-998 IF: 6.333 (ISSN: 0378-7753)

18. Hideki Abe, Hideki Yoshikawa, Naoto Umezawa, Ya Xu, **Govindachetty Saravanan**, Gubbala V. Ramesh, Toyokazu Tanabe, Rajesh Kodiyath, Shigenori Ueda, Nobuaki Sekido, Yoko Yamabe-Mitarai, Masahiko Shimoda, Takahisa Ohno, Futoshi Matsumoto, and Takayuki Komatsu

Correlation between the Surface Electronic Structure and CO-oxidation Activity of Pt Alloys

Phys. Chem. Chem. Phys., **2015,** 7, *17***,** 4879-4887; IF: 4.449 (ISSN 1463-9076)

19. Takao Gunji, Toyokazu Tanabe, **Govindachetty Saravanan**, Shingo Kaneko, Hideki Yoshikawa, Yoshitaka Matsushita, Nobuaki Sekido, Ya Xu, Shigenori Ueda, Hideki Abe, and Futoshi Matsumoto

Enhanced activity for oxygen reduction reactions by carbon-supported high-index-facet Pt-Ti nanoparticles

Electrochemistry, **2015,** 1, *83***,** 7-11, IF: 0.66 (ISSN: 2186-2451)

20. Pallavi Mungse, **Govindachetty Saravanan**,* Tomoki Uchiyama, Maiko Nishibori, Yasutake Teraoka, Sadhana Rayalu, and Nitin Labhsetwar*

Copper-Manganese Mixed Oxides: CO_2-selectivity, Stable, and Cyclic Performance for Chemical Looping Combustion of Methane
Phys. Chem. Chem. Phys., **2014**, 36, *16*, 19634-19642; IF: 4.449 (ISSN 1463-9076)

21. Takao Gunji, Takashi Tsuda, Arockiam John Jeevagan, Masanari Hashimoto, Toyokazu Tanabe, Shingo Kaneko, Masahiro Miyauchi, **Govindachetty Saravanan**, Hideki Abe, and Futoshi Matsumoto
Visible Light Induced Decomposition of Organic Compounds on WO_3 Loaded PtPb Co-catalysts
Cat. Comm., **2014**, *56*, 96-100; IF: 3.389 (ISSN: 1566-7367)

22. Nor A. Fadil, **Govindachetty Saravanan**, Gubbala V. Ramesh, Futoshi Matsumoto, Hideki Yoshikawa, Shigenori Ueda, Toyokazu Tanabe, Toru Hara, Shinsuke Ishihara, Hideyuki Murakami, Katsuhiko Ariga, and Hideki Abe
Synthesis and Electrocatalytic Performance of Atomically Ordered Nickel Carbide (Ni_3C) Nanoparticles
Chem. Commun., **2014***,* 49, *50,* 6451-6453; IF: 6.567, (ISSN 1364-548X) Royal Society of Chemistry (Highlighted as cover page article)

23. Francis Malar Auxilia, Shinsuke Ishihara, Saikat Mandal, Toyokazu Tanabe, **Govindachetty Saravanan**, Gubbala V. Ramesh, Naoto Umezawa, Toru Hara, Ya Xu, Shunichi Hishita, Yusuke Yamauchi, Arivuoli Dakshanamoorthy, Jonathan P. Hill, Katsuhiko Ariga,* and Hideki Abe*
Low-temperature remediation of NO catalyzed by interleaved CuO nanoplates
Adv. Mater. **2014**, 26, *26*, 4481-4485., IF: 18.96 (ISSN: 1521-4095) (Highlighted as cover page article)

24. Takao Gunji, **Govindachetty Saravanan**,* Toyokazu Tanabe, Takashi Tsuda, Masahiro Miyauchi, Genki Kobayashi, Hideki Abe, and Futoshi Matsumoto
Long-term, Stable, and Improved Oxygen-Reduction Performance of Titania-supported PtPb Nanoparticles
Catal. Sci. Technol., **2014**, 5, *4*, 1436-1455. IF: 5.287, (ISSN 2044-4761) Royal Society of Chemistry

25. Francis M. Auxilia, Toyokazu Tanabe, Shinsuke Ishihara, **Govindachetty Saravanan**, Gubbala V. Ramesh, Futoshi Matsumoto, Xu Ya, Katsuhiko Ariga, Arivuoli Dakshanamoorthy, Hideki Abe

Interleaved Mesoporous Copper for the Anode Catalysis in Direct Ammonium Borane Fuel Cells

J. Nanosci. Nanotech. **2014**, 6, *14*, 4443-4448. IF: 1.556 (ISSN: 1533-4899)

26. **Govindachetty Saravanan**, Kazuya Nanba, Genki Kobayashi, and Futoshi Matsumoto

Leaching Tolerance of Anodic Pt-based Intermetallic Catalysts for Formic Acid Oxidation

Electrochemica Acta **2013***, 99*, 15-21. IF: 4.803 (ISSN: 0013-4686)

27. **Govindachetty Saravanan**,* Toru Hara, Hideki Yoshikawa, Yoshiyuki Yamashita, Shigenori Ueda, Keisuke Kobayashi and Hideki Abe,*

Post-synthesis Dispersion of Metal Nanoparticles by Poly(amidoamine) Dendrimers: Size-Selective Inclusion, Water Solubilization, and Improved Catalytic Performance

Chem. Commun., **2012***,* 60, *48,* 7441–7443. IF: 6.567 (ISSN 1364-548X) (Highlighted as cover page article)

28. **Govindachetty Saravanan*** and Hideki Abe*

Influence of pH on Dendritic Structure of Strongly Fluorescent Persulfate-treated Poly(amidoamine) Dendrimer

J. Photochem. Photbiol. A, **2011**, *224*, 102-109. IF: 2.477 (ISSN: 1010-6030)

29. **Govindachetty Saravanan**, Kenji Daigo, Toyoko Imae, and Takao Hamakubo

Visual observation of avidin-biotin affinity by fluorescent G4.5 poly(amidoamine) dendrimer

Colloids and Surfaces B: Biointerfaces, **2011,** *83***,** 58-60. IF: 3.902 (ISSN: 0927-7765)

30. **Govindachetty Saravanan** and Toyoko Imae

Visual observation and characterization of fluorescent poly(amidoamine) dendrimer in film state

J. Nanosci. Nanotech. **2011,** 6, *11*, 4838-4845. IF: 1.556 (ISSN: 1533-4899)

31. **Govindachetty Saravanan***, Hideki Abe*, Ya Xu, Nobuaki Sekido, Hirohito Hirata, Shin-ichi Matsumoto, Hideki Yoshikawa, and Yoko Yamabe-Mitarai
Pt_3Ti Nanoparticles: Fine Dispersion on SiO_2 Supports, Enhanced Catalytic CO Oxidation and Chemical Stability at Elevated Temperatures
Langmuir, **2010**, 13, *26*, 11446-11451. IF: 3.993 (ISSN: 1520-5827)

32. Saikat Mandal, Marappan Sathish, **Govindachetty Saravanan**, K. K. R. Datta, Qingmin Ji, Jonathan P. Hill, Hideki Abe, Itaru Honma, and Katsuhiko Ariga
Open-Mouthed Metallic Microcapsules: Exploring Performance Improvement at Agglomeration-Free Interiors
J. Am. Chem. Soc. **2010**, 41, *132*, 14415-14417. IF: 13.038 (ISSN: 1520-5126)

33. **Govindachetty Saravanan**, Sumio Ozeki
Magnetic Field Control of Electron Tunneling Pathways in the Monolayer of (Ferrocenylmethyl)dodecyldimethylammonium Bromide on a Gold Electrode
J. Phys. Chem. B **2008**, 1, *112*, 3-6. IF: 3.187 (ISSN: 1520-5207)

34. **Govindachetty Saravanan**, Katsuhiko Fujio, Sumio Ozeki
Magnetic Field Effects on Electric Behavior of $[Fe(CN)_6]^{3-}$ at Bare and Membrane-coated Electrodes
Sci. Technol. Adv. Mater. **2008**, *9*, 1-7. IF: 3.513 (ISSN: 1878-5514)

Reports Published

1. Conducting Study of Vrushabhavathi River Valley in Bengaluru city for the purpose of Protection, Restoration and Rejuvenation. BBMP, Bengaluru, **2022**

2. Preliminary assessment of water- and sediment- quality of Sarkarperiyapalyam (Nanjarayan) lake, Tirupur in response to a communication from PWD, Tiruppur, **2022**

3. *Assessment of Water Quality and Sediment to Understand the Special Properties of River Ganga*; The Ministry of Water Resources, River Development and Ganga

Rejuvenation, GoI, New Delhi. **2017.**

Publications- Non-SCI Journals

1. Hideki Abe, **Govindachetty Saravanan**, Ya Xu, Nobuaki Sekido, Yoko Yamabe-Mitarai, and Masahiko Shimoda
Synthesis and Catalytic Performance of Intermetallic Nanoparticles
Materia **2010**, *49*, 314-316.

2. Ichiro Otsuka, **Govindachetty Saravanan**, Yuta Honma, Sumio Ozeki, Takenori Nakayama, Tetsuro Hosogi, Akihiko Ishibashi
Corrosion Inhibition of Copper due to Magnetic Treatment of Water
Journal of the JRICu, **2007**, *46*, 243-247.

3. Ichiro Otsuka, **Govindachetty Saravanan**, Sumio Ozeki, Takenori Nakayama, Tetsuro Hosogi, Chikara Saeki
Magnetic Treatment Effects of Water on Corrosion of Copper
Journal of the JRICu, **2006**, *45*, 174-178.

Conference Proceedings

1. Arockiam John Jeevagan, Takao Gunji, Naoyuki Sawano, **Govindachetty Saravanan**, Taiki Kojima, Shingo Kaneko, Genki Kobayashi, Futoshi Matsumoto
Two-Step Microwave Synthesis of Highly Dispersed Ordered Intermetallic PtPb Nanoparticles on Carbon Black
ECS Trans. **2014***, 58,* (in press)

2. Arockiam John Jeevagan, Yukiko Suzuki, Takao Gunji, **Govindachetty Saravanan**, Yuta Irii, Takashi Tsuda, Toshiaki Onobuchi, Shingo Kaneko, Genki Kobayashi, Futoshi Matsumoto
Electrocatalytic Oxygen Reduction and Water-Oxidation on Transition Metal Ion-Doped MnO_2, RuO_2 and IrO_2 in Alkaline Aqueous Solutions
ECS Trans. **2014***, 58,* 25-31

3. Futoshi Matsumoto, **Govindachetty Saravanan**, Genki Kobayashi
Application of Ordered Intermetallic Phases to Electrocatalysis

ECS Trans. **2013**, *50*, 3-8*.*

4. Nor Akmal Fadil, **Govindachetty Saravanan**, Hideki Yoshikawa, Yoshiyuki Yamashita, Shigenori Ueda, Keisuke Kobayashi, Toyokazu Tanabe, Toru Hara, Gubbala Venkata Ramesh, Hideyuki Murakami, Kazuhiko Noda, Hideki Abe
Wet Chemical Synthesis of Ni-Al Nanoparticles at Ambient Condition
Advanced Materials Research, **2012,** *Vol. 557-559,* 442-447.

Book Chapter

1. Locomotive Catalytic Control Options for Diesel Particulate Emissions Including that from Locomotive Engines
Locomotives and Rail Road Transportation, pp 169-192, 11 February 2017
Sunit K. Singh, Rohini Khobragade, **Govindachetty Saravanan**, Avinash K. Agarwal, Ahmed S. AL-Fatesh, Nitin K. Labhasetwar

2. Analysis of AC impedance results of formic acid oxidation on electrode catalysts, Technical Information Institute Co., Ltd. Japan. 2013, p.386
Futoshi Matsumoto and **Govindachetty Saravanan**

Invited Lectures

1. 92nd Spring Meeting, The Chemical Society of Japan, held on 25~28-3-2012 at KeioUniversity, Yokohama, Japan. Invited Lecture entitled "**Intermetallic Pt_3Ti Nanoparticles: Efficient Catalytic Centers for Exhaust Purification and Energy Applications".**

2. Tropo Mass Spectrometry (TMS) symposium held on 26th Jan 2013 at Kanagawa University, Japan. Invited lecture entitled "**Efficient approaches for the reduction in the amounts of platinum towards exhaust purification and fuel cell applications".**

3. 16th National Workshop on "Catalysis for Sustainable Development" held on 4~5-

2-2014 at CSIR-National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur, India. Invited Lecture entitled **"Efficient methods for the reduction in the amounts of platinum for catalytic applications"**

4. Self-sponsored workshop at VNIT-Nagpur. Invited lecture entitled "**Spectral Data Analysis and Spectral Interpretation for Structure Elucidation**"

5. Short Terms Training Program (STTP) on "Advances in Separation Technology" entitled "**Separation Techniques and Their Importance for Energy and Environmental-related Applications**"

6. NATIONAL SEMINAR ON RECENT ADVANCES IN CHEMISTRY (NSRAC)-2019, **Nano Platinum-based Intermetallic or Alloy Catalysts: Sustainable Option for Energy and Environmental Remediation Applications**

7. Delivered inaugural address (Scientium 2020) on Science day (28-02-2020) at Kongu Eng. College, Tamilnadu

8. Delivered Invited Lecture on ***Advanced Materials for Environmental Remediation Applications*** in A two-day-National Level Seminar on Urban Pollution, Environment and Health (UPEH) at Coimbatore Institute of Technology, Tamilnadu, 2020.

9. Delivered Invited Lecture *on* ***Engineered Surfaces for Energy and Environmental Remediation Applications*** *in National Level Webinar Series on Recent Trends in Applied sciences at Tamilnadu Open University, Chennai. 2021.*

10. Delivered Invited Lecture *on* ***Platinum Group Metals-based Nanoalloys as Low-cost Promising Alternatives for Indoor and Outdoor Applications*** *in 12th International Conference (Virtual) on Advancements in Polymeric Materials 9-13, Mar. 2021.*

11. Delivered Invited Lecture *on* ***Environmental Remediation Materials for Sustainable Developments*** *in FDP, Adhiyamaan College of Eng., 04 Aug. 2021.*

12. Delivered Invited Lecture on ***Engineered Materials: Sustainable Option for Environmental Remediation Applications*** *in New Perspectives of Chemistry, Kongunadu Arts and Science College., 15 Mar. 2022*

13. Delivered Invited Lecture on ***Engineered Nano-alloy Catalysts: Sustainable Option for Energy and Environmental Remediation Applications*** *in 2nd International Conference on Advances in Chemistry with Specific Reference to Catalysis, Sensors, Drug Delivery and Energy Materials (ICACSEM – 2022), 28&29th March 2022.*

Patents

1. Labhasetwar Nitin Kumar, Govindachettey Saravanan, Rakesh Kumar, Khobragade Rohini Ashokrao "**Development of substituted perovskites for diesel soot oxidation and process for the preparation thereof**" PATENT No.: 372495. (***Granted***)

2. Hideki Abe, Francis Malar Auxilia, Shinsuke Ishihara, Toyokazu Tanabe, **Saravanan Govindachetty**, Gubbala Venkata Ramesh, Toru Hara, Ya Xu, Shunichi Hishita, Katsuhiko Ariga
Self-assembled single crystalline petal-like nanostructured catalyst and its preparation
JP 2012-115599, **May 21, 2012** (Filed)

3. Abe Hideki; Noor Akmal Phadil; Murakami Hideyuki; Yoshikawa Hideki; Yamashita Yoshiyuki; Ueda Shigenori; Tanabe Toyokazu; Gubbala Venkata Ramesh; Saravanan Govindachetty
Oxidation-resistant NiAl nanoparticle and method of producing the same, and oxidation-resistant NiAl nanoparticle-containing Bond coat layer
JP6099251, Mar 3, 2017. (***Granted***)

4. Abe Hideki; Noor Akmal Phadil; Murakami Hideyuki; Yoshikawa Hideki; Yamashita Yoshiyuki; Ueda Shigenori; Tanabe Toyokazu; Gubbala Venkata Ramesh;

Saravanan Govindachetty, Ishihara Shinsuke, Ariga Katsuhiko
Small Diameter Ni3C Nanoparticle And Production Method Of The Same
JP5991670, Aug 26, 2016. (***Granted***)

5. Hideki Abe, Hideyuki Murakami, Fadil Nor Akmal, **Saravanan Govindachetty**, Toyokazu Tanabe, Gubbala Venkata Ramesh
Electroless plating in non-aqueous solutions
JP 2012-115600, May 21, **2012** (Filed)

6. Hideki Abe, **Saravanan Govindachetty,** Toru Hara, Hideki Yoshikawa, Yoshiyuki Yamashita, Shigenori Ueda, Keisuke Kobayashi
Preparation of electrode catalyst comprising of nanoparticles encapsulated dendrimer and their assembly
JP 2012-090413, Apr 11, **2012**. (Filed)

7. Abe Hideki; Francis Malar Auxilia; Ishihara Shinsuke; Tanabe Toyokazu; Saravanan Govindachetty; Venkata Ramesh Gubbala; Hara Toru; Kyo Tsugi; Hishida Shunichi; Ariga Katsuhiko
Single nanocrystal board-accumulative catalyst
JP6099238, Mar 3, 2017. (***Granted***)

8. Hideki Abe, Ya Xu, Yoko Mitarai, Nobuaki Sekido, **Saravanan Govindachetty**
Exhaust gas cleaning catalyst and method of manufacturing the same
JP5798425, Aug 28, **2015**. (***Granted***)

9. Hideki Abe, **Saravanan Govindachetty**, Katsuhiko Ariga
Metallic cells
JP5818244, Oct 9, **2015**. (***Granted***)

10. Hideki Abe, **Saravanan Govindachetty**, Toru Hara, Hideki Yoshikawa, Keisuke Kobayashi, Yoshiyuki Yamashita, Shigenori Ueda
Preparation of Strongly Fluorescent Nanoparticles Encapsulated Dendrimer
JP 5728780, Apr 17, **2015**. (***Granted***)

11. Hideki Abe, Ya Xu, Yoko Mitarai, Nobuaki Sekido, **Saravanan Govindachetty**, Shin-ichi Matsumoto, Hirohito Hirata, **Supported catalyst**
JP 5623070, Oct 3, **2014**. (***Granted***)

Projects

On-going

1. Hydrogen Mission (CSIR)

2. Raw-material characterization of Fireworks (Component Lead)
   CSIR

3. To prepare an action plan for remediation of entire affected Periyar river bodies/stretches including remediation of polluted stretch (Kuzhikandam Thodu), Kerala, Supervised Committee Member, NGT

Completed

- Minimization of the amount of platinum for automobile exhaust treatments through intermetallics based catalysts, (PI)
  - Science and Engineering Research Board, India

- Low-cost and shape-tailored Nano-catalysts for Volatile Organic Compounds Emission control (PI)
  - Nano mission/ Department of Science and Technology

- Water quality monitoring and sediment analysis for the Ganga River from Gomukh to Gangasagar (Team Member)
  - NMCG, Ministry of water resources and river rejuvenation

- TapCoal Project under 12th Five Year Plan. CSIR Network Project (Development of new/modified materials with high oxygen carrying capacity for chemical looping combustion (CLC). (Co-PI)
  - CSIR-Network project CSC-0102

- 5 Low-cost, Nano-Intermetallic / Alloy Catalysts as Promising Alternative to Expensive Platinum Catalyst for Fuel Cells (PI)
    - Science and Engineering Research Board, India

- Development of Low-cost Oxidation Catalysts for Diesel Exhaust Emission Control (Co-PI)
    - Science and Engineering Research Board, India

- Development of Novel Perovskite materials as a Suitable Candidate for Soot Oxidation (Co-PI)
    - Science and Engineering Research Board, India

- A detail study to understand the non-putrefying property of River Ganga in both water and sediment (Component Lead)
    - NMCG, Ministry of water resources and river rejuvenation

Committee

Lifetime membership in

- CATALYSIS SOCIETY OF INDIA
- VIBHA
- Research Council (RC) Member for Tamilnadu Open University