Scientist Biodata:

a. Name: Dr. Mani Karthik

b. Qualification: M.Sc., Ph.D.

c. Designation: Project Scientist "E"

d. Contact information:

Centre for Solar Energy Materials (CSEM), ARCI, Hyderabad

Office: +91-40-24452512

Mobile: +91-9959155218

Email: mkarthik@project.arci.res.in

e. Experience:

APRIL 2021 ONWARDS: **Project Scientist "E"**
Centre for Solar Energy Materials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Balapur, Hyderabad 500005, **INDIA**
Design and development of materials and prototypes for thermal energy storage applications

SEP. 2016 - MAR. 2021: **Project Scientist "E"**
Centre for Nanomaterials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Balapur, Hyderabad 500005, **INDIA.**
Design and fabrication of nanostructured materials for supercapacitors applications

DEC. 2014-Augest 2016: **Associate Researcher (Permanent Position)**
Thermal Energy Storage (TES) Group, CIC ENERGIGUNE, Alava, **SPAIN**
DESIGN AND FABRICATION OF MATERIALS FOR ENERGY STORAGE
Developed Porous Carbon Materials for Energy Storage Applications- **Supercapacitors, Batteries and Thermal Energy Storage**

JAN. 2012 -NOV. 2014: **Postdoctoral Researcher**, TES Group, CIC ENERGIGUNE, Alava, **SPAIN**
RESEARCH ON DEVELOPMENT OF LOW AND MEDIUM TEMPERATURES TES MATERIALS

APR. 2010 - FEB.2011: **Research Scientist,** Univ. Of Torino, Torino, **ITALY**
RESEARCH ON ANALYSIS OF TRACE TOXIC ELEMENTS IN SOILS, PLANTS AND MEDICINES

FEB. 2009 - JULY 2009: **Adjunct Assistant Professor,** NCTU, Hsinchu, **TAIWAN**
Established a new course and handled one semester teaching for PG students of NCTU

AUG. 2006 - JAN. 2009: **Postdoctoral Research Fellow,** NCTU, Hsinchu, **TAIWAN**
RESEARCH ON SYNTHESIS AND CHARACTERISATION OF NANOPOROUS MATERIALS

MAR. 2005 - MAR.2006: **Research Scientist,** KAIST, Daejeon, **SOUTH KOREA**
RESEARCH ON SYNTHESIS AND CHARACTERISATION OF NANOPOROUS MATERIALS

JUNE 2000 - FEB. 2005: **Research Fellow,** Anna Univ., and CLRI, Chennai, **INDIA**
RESEARCH ON SYNTHESIS AND CHARACTERISATION OF NANOPOROUS MATERIALS

f. Research Areas of Interest:

- ***Materials for Energy Storage:*** **Supercapacitors and Batteries**
  Main Tasks: To develop efficient electrode materials for **high performance Supercapacitors and Batteries.** Design and fabrication of nanostructured materials for Supercapacitors Device and Electric Vehicles (EV's) Applications - Demonstration of Supercapacitor Powered Electric-Bike (E-Bike) and various proto-type devices

- ***Solar Energy Materials - Solar Energy Conversion and Storage***
  Main Tasks: To develop solar energy materials for low, medium and high temperatures solar thermal energy storage applications (Sensible and latent heat thermal energy storage)

- ***Nano Fluids for Solar Thermal Energy Storage Applications***
  Main Tasks: To develop nanofluids with high thermal conductivity, high heat capacity, good dispersion of nanoparticles in base fluids, and good stability for solar thermal energy applications

g. List of Journal Publications:
Papers Published/Accepted in the Journals
(✶-Corresponding author)

S. No.	Journal Papers	Impact Factors (IF)
1.	George Elsa, Manavalan Vijayakumar, Rajendran Navaneethan and **Mani Karthik*,** Novel insight into the concept of favourable combination of electrodes in high voltage supercapacitors: Towards ultrahigh volumetric energy density and outstanding rate capability, **Global Challenges, Accepted, Articles in Press, 2021.**	**3.847**
2.	V. N. Rao, P. Ravi, M. Sathish, M. Vijayakumar, M. Sakar, **M. Karthik,** S. Balakumar, K. R. Reddy, N. P. Shetti, M. V. Shankar, Tejraj M. Aminabhavi, Metal chalcogenide-based core/shell photocatalysts for solar hydrogen production: Recent advances, properties and technology challenges, **Journal of Hazardous Materials, Vol. 415, pp. 125588-125609, 2021.**	**10.588**
3.	Manavalan Vijayakumar, George Elsa, Aamani Nirogi, Rajendran Navaneethan, Ammaiyappan Bharathi Sankar and **Mani Karthik*,**	**-**

	MXenes and Their Composites for Hybrid Capacitors and Supercapacitors: A Critical Review, **Emergent Materials, Vol. 4, pp. 655-672, 2021.**	
4.	Manavalan Vijayakumar, Ammaiyappan Bharathi Sankar, Duggirala Sri Rohita, Katchala Nanaji, Tata Narasinga Rao and **Mani Karthik***, Achieving High Voltage and Excellent Rate Capability Supercapacitor Electrodes Derived From Biorenewable and Sustainable Resource, **Chemistry Select, Vol. 5, pp. 8759 –8772, 2020**	**2.109**
5.	Navakanth Vijay Challagulla, Manavalan Vijayakumar, Duggirala Sri Rohita, George Elsa, Ammaiyappan Bharathi Sankar, Tata Narasinga Rao and **Mani Karthik***, Hierarchical Activated Carbon Fibres as a Sustainable Electrode and Natural Seawater as a Sustainable Electrolyte for High Performance Supercapacitor, **Energy Technology, Vol. 8, pp. 2000417, 2020.**	**3.631**
6.	T. Mitravinda, **M. Karthik**, S. Anandan, C.S. Sharma and T.N. Rao, Fabrication of bio-waste derived carbon-carbon based electrodes for high-performance supercapacitor applications, **Indian Journal of Engineering and Materials Sciences, Vol. 27 (6) SI, ppp 1080-1090, 2020.**	**0.881**
7.	Manavalan Vijayakumar, Ammaiyappan Bharathisankar, Duggirala Sri Rohita, Tata Narasinga Rao and **Mani Karthik*,** Conversion of Biomass Waste into High Performance Supercapacitor Electrodes for Real-Time Supercapacitor Applications **ACS Sustainable Chemistry and Engineering, Vol. 7, pp. 17175-17185, 2019.**	**8.198**
8.	Manavalan Vijayakumar, Duggirala Sri Rohita, Tata Narasinga Rao and **Mani Karthik***, Electrode mass ratio impact on electrochemical capacitor performance, **Electrochimica Acta,** Vol. 298, pp. 347-359, **2019.**	**6.901**
9.	N. Lakshmana Reddy, V.N. Rao, M. Vijayakumar, R. Santhosh, S. Anandan, **M. Karthik***, M.V. Shankar, K.R. Reddy, N.P. Shetti, M.N. Nadagouda, T.M. Aminabhvi, A review on frontiers in plasmonic nano-photocatalysts for hydrogen production, **International Journal of Hydrogen Energy,** Vol. 44, pp. 10453-10472, **2019.**	**5.816**
10.	Manavalan Vijayakumar, Ravichandran Santhosh, Jyothirmayi Adduru, Tata Narasinga Rao, **Mani Karthik***, Activated carbon fibres as high performance supercapacitor electrodes with commercial level mass loading, **Carbon,** Vol. 140, pp. 465-476, **2018.**	**9.594**
11.	Santhosh Ravichandran, S.R. Sita Raman, Sudha Murali Krishna, Syamsai Ravuri, V. Sandhya, Sourav Ghosh, Niroj Kumar Sahu, Sathyanarayanan Punniyakoti, **M. Karthik**, Pratap Kollu, Soon Kwan Jeong, Andrews Nirmala Grace, Heteroatom doped graphene based hybrid electrode materials for supercapacitor applications, **Electrochimica Acta,** Vol. 276, pp. 284-292, **2018.**	**6.901**
12.	B. D'Aguanno, **M. Karthik,** N. Grace, A. Floris**,** Thermostatic properties of nitrate molten salts and their solar and eutectic mixtures, **Scientific Reports (Open Access, Nature Publishers),** Vol. 8, pp. 10485, **2018.**	**4.379**
13.	Nagappagari Lakshmana Reddy, Vempuluru Navakoteswara Rao, Murkinati Mamatha Kumari, Raghava Reddy Kakarla, Parnapalle Ravi Marappan Sathish, **Mani Karthik**, Shankar Muthukonda Venkatakrishnan, Inamuddin, Nanostructured semiconducting materials for efficient hydrogen generation, **Environmental Chemistry Letters,** pp, 1-32, **2018.**	**9.027**
14.	Manavalan Vijayakumar, Jyothirmayi Adduru, Tata Narasinga Rao, and **Mani Karthik***, Conversion of Solar Energy into Electrical Energy Storage: Supercapacitor as an Ultrafast Energy-Storage Device Made from Biodegradable Agar-Agar as a Novel and Low-Cost Carbon Precursor, **Global Challenges (Open Access, Wiley Publishers),** Vol. 2, Issue. 10, 1800037, **2018. Highlighted in the Front Cover Page**	**3.847**

15.	**Mani Karthik✭**, Abdessamad Faik, and Bruno D'Aguanno, Graphite Foam as Interpenetrating Matrices for Phase Change Paraffin Wax: A Candidate Composite for Low Temperature Thermal Energy Storage, **Solar Energy Materials and Solar Cells,** Vol. 172, pp. 324-334, **2017.**	**7.267**
16.	D. Praveen Kumar, V. Durga Kumari, **M. Karthik***, M. Sathish and M.V. Shankar*, Shape dependence structural, optical and photocatalytic properties of TiO_2 nanocrystals for enhanced hydrogen production by photoinduced glycerol reforming, **Solar Energy Materials & Solar Cells,** Vol. 163, pp. 113-119, **2017.**	**7.267**
17.	Mery Malandrino, Agnese Giacominol, **Mani Karthik**, Isabella Zelano, Debora Fabbri, Marco Ginepro, Roger Fuoco, Patrizia Bogani, Ornella Abollino, Inorganic markers profiling in wild type and genetically modified plants subjected to abiotic stresses, **Microchemical Journal,** Vol. 134, pp. 87-97, **2017.**	**4.821**
18.	N. Lakshmana Reddy, **M. Karthik** and M.V. Shankar, Synthesis of Ag-TiO_2 nanoparticles for improved photocatalytic hydrogen production under solar light irradiation, **Advanced Porous Materials,** Vol. 5, 1-6, **2017.**	**-**
19.	S. Sakthivel, **M. Karthik** and Tata Narasinga Rao, Nanotechnology for Concentrated Solar Thermal Power Applications, **Nanotech Insights: A quarterly newsletter,** Vol. 7, Issue 3 & 4, pp. 44-52, **2016.**	**-**
20.	Iñigo Ortega-Fernández, AbdessamadFaik, **Karthik Mani**, Javier Rodríguez-Aseguinolaza and Bruno D'Aguanno, Experimental investigation of solid by-product as sensible heat storage material: characterization and corrosion study, **AIP Conference Proceedings** 1734, 050036, **2016,** doi: 10.1063/1.4949134	**-**
21.	D. Praveen Kumar, N. Lakshmana Reddy, **M. Karthik✭**, B. Neppolian, J. Madhavan, M.V. Shankar, Solar light sensitized p-Ag_2O/n-TiO_2 nanotubes heterojunction photocatalysts for enhanced hydrogen production in aqueous-glycerol solution, **Solar Energy Materials & Solar Cells,** Vol. 154, pp. 78-87, **2016.**	**7.267**
22.	Dharani Praveen Kumar, Nagappagari Lakshmana Reddy, Basavaraju Srinivas, Valluri Durgakumari, Vladimir Roddatis, Oleksandr Bondarchuk, **Mani Karthik✭**, YasuroIkuma, Muthukonda V. Shankar, Stable and active Cu_xO/TiO_2 nanostructured catalyst for proficient hydrogen production under solar light irradiation, **Solar Energy Materials & Solar Cells.** Vol. 146, pp. 63-71, **2016.**	**7.267**
23.	**M. Karthik✭**, A. Faik, P. Blanco-Rodríguez, J. Rodríguez-Aseguinolaza and B. D'Aguanno, Preparation of erythritol–graphite foam phase change composite with enhanced thermal conductivity for thermal energy storage applications, **Carbon,** Vol. 94, pp. 266-276, **2015.**	**9.594**
24.	**M. Karthik✭**, A. Faik, S. Doppiu, V. Roddatis andB. D'Aguanno, A simple approach for fabrication of interconnected graphitized macroporous carbon foam with uniform mesopore walls by using hydrothermal method, **Carbon,** Vol. 87, pp. 434-443, **2015.**	**9.594**
25.	D. Praveen Kumar, N. Lakshmana Reddy, M. Mamatha Kumari, B. Srinivas, V. Durgakumari, B. Sreedhar V. Roddatis, O. Bondarchuk, **M. Karthik**, B. Neppolian and M.V. Shankar, Cu_2O-Sensitized TiO_2Nanorods with nanocavities for highly efficient photocatalytic hydrogen production under solar irradiation, **Solar Energy Materials** & **Solar Cells,** Vol. 136, pp. 157-166. **2015.**	**7.267**
26.	**M. Karthik✭**, E. Redondo, E. Goikolea, V. Roddatis and R. Mysyk, Large-scale hydrothermal synthesis of hierarchical mesoporous carbon for high-performance supercapacitors, **Energy and Environmental Focus,** Vol. 4(3), pp. 201-208, **2015.**	**-**
27.	C. Sathiskumar, S. Karthikeyan, V. Roddatis, **M. Karthik✭**, Facile and Large Scale Fabrication of Thick walled Carbon Nanotubes by Using Waste Tire Pyrolysis Oil as Carbon Feedstock, **Materials Focus,** Vol. 4, pp. 307-312, **2015.**	**-**

28.	C. Sathiskumar, **M. Karthik**, S Karthikeyan, Synthesis of Y-Junction Carbon Nano-Fibers by CVD Process from Tire Pyrolysis Oil, **Journal of Environmental Nanotechnology,** Vol. 4 (1), pp. 23-26, **2015.**	**0.440**
29.	K. Pushpalatha, **M. Karthik**, M. Malarvizhi, Synthesis and Characterisation of Thin Films using Tanner's Cassia, Nerium, Basil Leaf Extract Doped with Green Tea Extract Deposited by Single Dip Coating Method, **Journal of Environmental Nanotechnology**, Vol. 4 (3), pp. 37-41, **2015.**	**0.440**
30.	**M. Karthik*** and Hsunling Bai, Selective Catalytic Reduction of NO using Acetone Solvent Vapors as the Reducing Agent over Cu^{2+} and/or Al^{3+} ions Substituted MCM-41 Catalysts, **Applied Catalysis B: Environmental,** Vol. 144, pp. 809-815, **2014.**	**19.503**
31.	**M. Karthik**, E. Redondo, E. Goikolea, R. Vladimir, S. Doppiu and R. Mysyk, Effect of mesopore ordering in otherwise similar micro/mesoporous carbons on the high-rate performance of Electric Double-Layer Capacitors, **Journal of Physical Chemistry C,** Vol. 118 (48), pp. 27715-27720, **2014.**	**4.126**
32.	P. Mahalingam, N. Sivakumar, **M. Karthik** and S. Karthikeyan, Characterization of magnetic metal encapsulated in multi-walled carbon nanotubes synthesized from methyl ester of pongamiapinnata oil and its application for removal of arsenic ions from aqueous solution, **Asian Journal of Chemistry,** Vol. 26 (14), pp. 4167-4171, **2014.**	**0.355**
33.	P. Shanthi, **M. Karthik**, K. JothiVenkatachalam and S. Karthikeyan, Adsorption of Acid Blue 92 from aqueous solution using an activated carbon prepared from sterculiaquadrifidaseed shell waste, **Journal of Environmental Nanotechnology,** Vol.3 (4), pp. 96-104, **2014.**	**0.440**
34.	S. Kalaiselvan, **M. Karthik,** R. Vladimir and S. Karthikeyan, Growth of bamboo like carbon nanotubes from brassica juncea as natural precursor, **Journal of Environmental Nanotechnology,** Vol.3 (2), pp. 92-100, **2014.**	**0.440**
35.	V.S. Angulakshmi, C. Sathiskumar, **M. Karthik** and S. Karthikeyan, Synthesis of multi-walled carbon nanotubes from glycine max oil and their potential applications, **Journal of Environmental Nanotechnology,** Vol.2, pp. 101-106, **2013.**	**0.440**
36.	Yu-Chang Chang, Hsunling Bai, Hsueh-Shih Chiang, **M. Karthik**, Shou-Nan Li, Jung-Nan Hsu and Hui-Ya Shih, 'Development of regenerative dye impregnated mesoporous silica materials for assessing exposure to ammonia', **The Journal of the Air & Waste Management Association (A&WMA),** Vol. 62 (7), pp. 838-845, **2012.**	**2.235**
37.	Agnese Giacomino, Ornella Abollino, Mery Malandrino, **M. Karthik** and Velayutham Murugesan, 'Determination and assessment of the contents of essential and potentially toxic elements in Ayurvedic medicine formulations by inductively coupled plasma-optical emission spectrometry', **Microchemical Journal**, Vol. 99, pp. 2-6, **2011.**	**4.821**
38.	**M. Karthik**, L.Y. Lin and H. Bai, 'Bifunctional mesoporous Cu-Al-MCM-41 materials for simultaneous catalytic abatement of NOx and VOCs', **Microporous and Mesoporous Materials,** Vol. 117, pp. 153-160, **2009.**	**5.455**
39.	Y. Chen, **M. Karthik** and H. Bai, 'Modification of CaO by organic alumina precursor for enhancing cyclic capture of CO_2greenhouse gas', **Journal of Environmental Engineering-American Society of Civil Engineers (ASCE)**, Vol. 135, pp. 459-464, **2009.**	**1.117**
40.	Chinte Hung, Hsunling Bai and **M. Karthik**, 'Ordered mesoporous silica particles and Si-MCM-41 for the adsorption of acetone: A comparative study', **Separation and Purification Technology,** Vol. 64, pp. 265-272, **2009.**	**7.312**
41.	Yan-Huei Jan, Liang-Yi Lin, **M. Karthik** and Hsunling Bai, 'Titanium dioxide/zeolite catalytic adsorbent for the simultaneous removals of NO and acetonevapors', **The Journal of the Air & Waste Management Association (A&WMA),**Vol. 59, pp. 1186-1193, **2009.**	**2.235**

42.	S. Karthikeyan, P. Mahalingam and **M. Karthik**, 'Large scale synthesis of carbon nanotubes: A Review', **E-Journal of Chemistry**, Vol. 6(1), pp. 1-12, **2009.**	**2.506**
43.	**M. Karthik**, M. Palanichamy and V. Murugesan, 'A mild, eco-friendly and efficient zeolite catalyzed synthesis of vibrindole A and bis(indolyl)methanes', **Studies in Surface Science and Catalysis,** Vol. 156, pp. 873-878, **2005.**	**1.100**
44.	**M. Karthik**, C.J. Magesh, P.T. Perumal, M. Palanichamy, BanumathiArabindoo and V. Murugesan, 'Zeolite catalysed ecofriendly synthesis of vibrindole A and bis(indolyl)methanes', **Applied Catalysis A: Gen.,** Vol.286, pp. 137-141, **2005.**	**5.706**
45.	A. Vinu, **M. Karthik**, M. Miyahara, V. Murugesan and K. Ariga**,** '*ortho* -Selective ethylation of phenol with ethanol catalysed by bimetallic mesoporous catalyst, CoAl-MCM-41, **J. Molecular Catalysis A: Chem**., Vol. 230, pp. 151-157, **2005.**	**5.062**
46.	V. Murugesan, K.K. Cheralathan and **M. Karthik**, 'Catalysis by materials for fine chemical production', **Bulletin of the Catalysis Society of India**, Vol. 3, pp. 23-42, **2004.**	**-**
47.	C.J. Magesh, R. Nagarajan, **M. Karthik** and P.T. Perumal, 'Synthesis and characterisation of bis(indolyl)methanes, tris(indolyl)methanes and new diindolylcarbazolylmethanes mediated by Zeokarb-225, a novel, recyclable, eco-benign heterogeneous catalyst', **Applied Catalysis A: Gen**., Vol. 266, pp. 1-10, **2004.**	**5.706**
48.	**M. Karthik✭**, A. Vinu, A.K. Tripathi, N.M. Gupta, M. Palanichamy and V. Murugesan, 'Synthesis, characterization and catalytic performance of Mg and Co substituted mesoporous aluminophosphates', **Microporous and Mesoporous Materials,** Vol. 70, pp. 15-25, **2004.**	**5.455**
49.	**M. Karthik✭**, A.K.Tripathi, N.M. Gupta, A. Vinu, M. Hartmann, M. Palanichamy and V. Murugesan, 'Characterization of Co,Al-MCM-41 and its activity in the*t*-butylation of phenol using isobutanol', **Applied Catalysis A: Gen**., Vol. 268, pp. 139-149, **2004.**	**5.706**
50.	**M. Karthik**, A.K. Tripathi, N.M. Gupta, M. Palanichamy and V. Murugesan, 'Zeolite catalysed electrophilic substitution reaction of indoles with aldehydes: synthesis of bis(indolyl)methanes', **Catalysis Communications,** Vol. 5, pp. 371-375, **2004.**	**3.626**

h. Papers Presented in the Conferences

1. S. Sarveshvaran, K.K. Phani Kumar, M. Shiva Prasad, Selvan Bellan, **Mani Karthik,** Shanmugasundaram Sakthivel, Cost-effective, Scalable and High Temperature Stable Spinel Structured Solid Particles for High Temperature Solar Thermal Energy Storage Applications, 11th Solaris 2021-Internatioal Symposium on Solar Energy and Efficient Energy Usage, September 27-30, 2021, Tokyo, Japan.
2. Genta Tsurumaki, Selvan Bellan, Koji Matsubara, Tatsuya Kodama, Mitsuho Nakakura, Nobuyuki Gokon, Hyun Seok Chok, **Mani Karthik** and Shanmugasundaram Sakthivel, Fluidization behavior of redox metal oxide and spinel particles to develop high-energy-density thermal energy storage system for concentrated solar power applications, 11th Solaris 2021-Internatioal Symposium on Solar Energy and Efficient Energy Usage, September 27-30, 2021, Tokyo, Japan.
3. b, Opportunities and current challenges of supercapacitor technologies for real-world applications, Proceedings of International Conference on Supercapacitors, Energy Storage and Applications (ICSEA-2019), Organized by Centre for Materials for Electronics Technology (C-MET), March 8-10, 2019, Thrissur, Kerala, India.
4. Bharathi Sankar, **M. Karthik**, S. Anandan, R. Vijay, T.N. Rao, Design, development and real-time demonstration of supercapacitor powered electric bicycle, Proceedings of International Conference on Supercapacitors, Energy Storage and Applications (ICSEA-2019), Organized by Centre for Materials for Electronics Technology (C-MET), March 8-10, 2019, Thrissur, Kerala, India.

5. Manavalan Vijayakumar, Duggirala Sri Rohita, Jyothirmayi Adduru, Tata Narasinga Rao and **Mani Karthik**, Biomass Derived High Surface Area Activated Carbon as High Performance Supercapacitor for Electrical Energy Storage, The Proceedings of National Conference on Electric Mobility, Opportunities and Challenges, February 22nd, 2018. SRM Institute of Science and Technology, Chennai, Tamilnadu, India
6. Ammaiyappan Bharathisankar, Manavalan Vijayakumar, Seyezhai Ramalingam and **Mani Karthik**, Implementation of Field Programmable Gate Array based three phase Brushless Direct Current drive for Electric Vehicles, The Proceedings of National Conference on Electric Mobility, Opportunities and Challenges, February 22nd, 2018. SRM Institute of Science and Technology, Chennai, Tamilnadu, India.
7. **Mani Karthik**, Enhancement of Specific Heat Capacity of Alkali Metal Salts by Addition of Nanomaterials for High Temperature Thermal Energy Storage Applications, 1st International Conference on Nanoscience and Nanotechnology (ICNAN-2016), October 19-21, 2016, Center for Nanotechnology Research, VIT University, Vellore, Tamilnadu, India.
8. B.D. Aguanno, A. Floris, **M. Karthik**, Structural and Thermodynamic Properties of Nanomaterials for Thermal Energy Storage at High Temperature, 1st International Conference on Nanoscience and Nanotechnology (ICNAN-2016), October 19-21, 2016, Center For Nanotechnology Research, VIT University, Vellore, Tamilnadu, India.
9. JosuLópez-López, **Mani Karthik**, Abdessamad Faik and Bruno D'Aguanno, 'Effects of Nanostructured Silicate Based Material on Enhancing the Specific Heat Capacity of NITRATE Salt For Solar Thermal Energy Storage Application', International Conference on Nanomaterials and Nanotechnology, NANO-15,7-10 December, 2015, KSR Group of Institution, Tiruchengode, Tamilnadu, India.
10. JosuLópez-López, **Karthik Mani**, Andrea Floris, Abdessamad Faik, and Bruno D'Aguanno, 'Influence of Nanoparticles on Specific Heat Capacity Enhancement of KNO_3-$NaNO_3$ binary nitrate salts system', 21st SolarPACES Conference, October 13-16,2015, Cape Town, South Africa.
11. Iñigo Ortega-Fernández, AbdessamadFaik, **Karthik Mani**, Javier Rodríguez-Aseguinolaza and Bruno D'Aguanno, 'Experimental investigation of solid by-product as sensible heat storage material: characterization and corrosion study',21stSolarPACES Conference, October 13-16, 2015, Cape Town, South Africa.
12. **Mani Karthik**, AbdessamadFaik, Bruno D´Aguanno, Alexandre Godin, Marie Duquesne, Elena Palomo del Barrio, CédricLebotandJérômeMalvestio, 'Thermal properties improvement of hybrid materials made of carbon foams saturated with sugar alcohols for seasonal energy storage applications', IEA-ECES Greenstock Conference, May 19-21, 2015, Beijing, China.
13. **Mani Karthik**, 'Porous structures for thermal conductivity enhancement', SAMSSA Workshop, March 17-18, 2015, CIC Energigune, Vitoria - Gasteiz, Spain.
14. **Mani Karthik**, AbdessamadFaik, Bruno D´Aguanno, Prasanta Jana, Vanessa Fierro, Alain Celzard, Radu-Robert Piticescu and Adrian M. Motoc, 'Tailor-Made Carbon Structures Development and Carbon Surface Functionalization - Synthesis', SAMSSA Workshop, March 17-18, 2015, CIC Energigune, Vitoria - Gasteiz, Spain.
15. **Mani Karthik**, AbdessamadFaik, Bruno D´Aguanno, Prasanta Jana, Vanessa Fierro, Alain Celzard, Radu-Robert Piticescu and Adrian M. Motoc, 'Tailor-Made Carbon Structures Development and Carbon Surface Functionalization - Characterization', SAMSSA Workshop, March 17-18, 2015, CIC Energigune, Vitoria - Gasteiz, Spain.
16. **M. Karthik**, A. Faik, P. Blanco-Rodríguez, J. Rodríguez-Aseguinolaza and B. D'Aguanno, 'Thermal Conductivity Enhancement of Phase Change Materials by Using Graphitized Carbon Foam for Thermal Energy Storage Applications', International Conference on Diamond and Carbon Materials, September7-11, 2014, MeliaCastilla, Madrid, Spain.
17. D. Praveen Kumar, M.V. Shankar, M. MamathaKumari, N. Lakshmana Reddy, B. Srinivas, V.Durgakumari, B. Neppolian, Vladimir Roddatis and **Mani Karthik**, 'Comparison of hydrogen production efficiency with different nanostructures of Cu_xO/TiO_2 catalyst under solar light irradiation',The 3rd international symposium on advanced electron microscopy for catalysis, September 3-6, 2014, Monastery, Germany.
18. Edurne Redondo, **Mani Karthik**, Vladimir Roddatis, Eider Goikolea and Roman Mysyk, 'Effect of mesopore ordering on the high rate capability of supercapacitors', Power Our Future 2014, April 2-4, 2014, Vitoria - Gasteiz, Spain.
19. J. Segalini, B. Daffos, Y. Gogotsi, P.-L. Taberna, P. Simon, **M. Karthik**, E. Martin, M. Casas-Cabanas and D. Saurel, 'Small Angle X-rays Scattering at CIC Energigune: Porous carbons for supercapacitors', Power Our Future 2014, April 2-4, 2014, Vitoria - Gasteiz, Spain.

20. **Mani Karthik** and StefaniaDoppiu, 'Simple and versatile one-step synthesis of highly interconnected graphitised macroporous carbon foam', The Annual International World Conference on Carbon 2013, July 14-19, 2013, Copacabana, Rio de Janeiro, Brazil.
21. C. Sathiskumar, **M. Karthik**, A. JafarAhamed, D. Saravanan, and S. Karthikeyan, 'Synthesis of Multi-Walled Carbon Nanotubes by Spray Pyrolysis using Tire PyrolysisOil as Starting Material', The Annual International World Conference on Carbon 2013,July 14-19, 2013, Copacabana, Rio de Janeiro, Brazil.
22. **Mani Karthik**, Edurne Redondo, Eider Goikolea, StefaniaDoppiu and Roman Mysyk, 'Synthesis of bimodal micro-mesoporous carbon by simple and efficient hydrothermal method and their performance in supercapacitors applications', International Conference on Advanced Capacitors (ICAC 2013), May 27-30, 2013, Osaka, Japan.
23. P. Blanco, J. Rodríguez, A. Faik, N. Calvet, **M. Karthik**, M.J. Tello and S. Doppiu, 'Eutectic metal alloys as phase change material for thermal energy storage in concentrated solar power', Proceeding of SolarPACES 2012, Sep. 11-14, 2012, Marrakech, Morocco.
24. Hsunling Bai, **Mani Karthik**, Liang-Yi Lin, 'Using Waste Organic Solvent Vapours as the Reducing Agent of deNOx Process', Proceedings of the *101th*Air & Waste Management Association (A&WMA), Annual Conference & Exhibition, June 24-27, 2008, Oregon Convention Center, Portland, Oregon, USA.
25. **Mani Karthik**, Liang-Yi Lin and HsunlingBai, 'Mesoporous Cu-MCM-41 and Cu-Al-MCM-41 catalysts for the simultaneous abatement of NOx and VOCs in exhaust gas stream', Proceeding of 4thconference on Environmental Protection and Nanotechnology, May 25, 2007, National Chung Hsing University, Taichung, Taiwan.
26. Chin-Te Hung, HsunlingBai, **Mani Karthik** and Liang-Yi Lin, 'Comparison of mesoporous silica particles and MCM-41 as adsorbents for acetone removal', Proceeding of 4th conference on Environmental Protection and Nanotechnology, May 25, 2007, National Chung Hsing University, Taichung, Taiwan.
27. HsunlingBai, Yi-Tsen Chen, **Mani Karthik**, 'Comparison of cyclic carbon dioxide capture between CaO and Al modified CaO adsorbents', Chemrawn-XVII and ICCDU-IX Conference on Greenhouse Gases Mitigation and Utilization, July 8-12, 2007, Kingston, Ontario, Canada.
28. **M. Karthik**, M. Palanichamy and V. Murugesan, 'A mild, eco-friendly and efficient zeolite catalyzed synthesis of vibrindole A and bis(indolyl)methanes', Proceedings of the 4th International Symposium on Nanoporous Materials, Nanoporous Materials - IV, June 8-11, 2005, Niagara Falls, Ontario, Canada.
29. **M. Karthik**, S. Gopalakrishnan, Banumathi Arabindoo, M. Palanichamy and V. Murugesan, 'ZnY Zeolite as an Efficient Catalyst for the Synthesis of Vibrindole A and Bis(indolyl)methanes', 17th National symposium on Catalysis, Jan. 18-20, 2005, CSMCRI, Bhavnagar, India.
30. **M. Karthik**, A.K. Tripathi, N.M. Gupta, M. PalanichamyandV. Murugesan, 'Synthesis, characterisation of mesoporous CoAPO molecular sieves and its catalytic performance', Workshop on Advances in Catalysis, Jan. 6-7, 2004, Loyola College, Chennai, India.
31. V. Murugesan, K.K. Cheralathan and **M. Karthik**, 'Catalysis by materials for fine chemical production', Workshop on Advances in Catalysis, Jan. 6-7, 2004, Loyola College, Chennai, India.
32. **M. Karthik**, A.K. Tripathi, N.M. Gupta, Banumathi Arabindoo, M. Palanichamy and V. Murugesan, 'HY zeolite: An efficient catalyst for the electrophilic substitution of indoles with aldehydes and ketones', National Seminar on Role of Chemistry in Emerging Areas of Applied Sciences, Mar. 15-17, 2004, Department of Chemistry, Sri Venkateswara University, Tirupati, India.
33. **M. Karthik**, M. Palanichamy and V. Murugesan, 'Synthesis and characterisation of Mg and Co containing mesoporous aluminophosphate-based molecular sieves'. Proceedings of National Conference on Resent Advances in Molecular Interactions (NCRAMI-2004), Mar. 26-27, 2004, Department of Physics, PSG College of Arts and Science, Coimbatore, India.
34. **M. Karthik**, A.K. Tripathi, N.M. Gupta, M. Palanichamy and V. Murugesan, 'A novel synthesis of Mg and Co containing mesoporous aluminophosphate-based molecular sieves', Fifth National Symposium In Chemistry, Feb. 7-9, 2003, Central Leather Research Institute, Chennai, India.
35. **M. Karthik**, A. Vinu, A.K. Tripathi, N.M. Gupta, M. Palanichamy, BanumathiArabindoo and V. Murugesan, '*tert*-Butylation of phenol with isobutanol over mesoporous Co-Al-MCM-41', 16th National Symposium on Catalysis and 1st Indo-German Conference on Catalysis, Feb. 6-8, 2003, Indian Institute of Chemical Technology, Hyderabad, India.

36. **M. Karthik**, K.K. Cheralathan, M. Palanichamy, Banumathi Arabindoo and V. Murugesan, '*tert*-Butylation of m-Cresol over Al-MCM-41 supported phosphotungstic acid', National Symposium on New Horizons in Heterogeneous Catalysis, Feb. 22-24, 2002, Banaras Hindu University, Varanasi, India.

i. List of Patents:

1. **Mani Karthik,** Abdessamad Faik and Stefania Doppiu, **"**Process for the preparation of hierarchically meso and macroporous structured materials", **EP2909134 (A1), Published in 26.08.2015. Patent Granted No. EP2909134 (B1) - 10.05.2017.**
2. **Mani Karthik**, "Process for the preparation of flexible meso and macroporous carbon foams, **EP2921468 (A1), Published in 23.09.2015.**
3. **Mani Karthik,** Abdessamad Faik and Stefania Doppiu, **"**Process for the preparation of hierarchically meso and macroporous structured materials", **WO2014060508 (A1), Published in 24.04.2014.**
4. **Mani Karthik,** Abdessamad Faik and Stefania Doppiu, **"**Process for the preparation of hierarchically meso and macroporous structured materials", **US2015284252 (A1), Published in 08.10.2015.**
5. **Mani Karthik,** Abdessamad Faik and Stefania Doppiu, **"**Process for the preparation of hierarchically meso and macroporous structured materials"**, Granted No. ES2636614T3-10.05.2017.**
6. **Mani Karthik**, Abdessamad Faik and Bruno D'Aguanno, "Heat transfer nanocomposite material", **European Patent application no. EP16382451.9, Published in 30.09.2016.**
7. **Mani Karthik**, Abdessamad Faik and Bruno D'Aguanno, "Heat transfer nanocomposite material", **International Patent Application No. PCT/EP2017/074843, WO2018060460A1. Published in 05.04.2018.**
8. Shanmugasundaram Sakthivel, **Mani Karthik,** Pillai Sorimuthu Kumar, Karuparthi K Phani Kumar, "Method of producing carbon nanostructure materials for heat transfer, lubrication and energy storage applications" **Indian Patent Application No. 202011017775, Dated. 25.04.2020.**
9. **Mani Karthik,** Ravula Vijay, Tata Narasinga Rao, "Method of producing porous particles-fibers carbon composites for supercapacitor applications and the product thereof" **Indian Patent Application No. 202011027265 Dated. 26.06.2020.**

j. Contribution to Book Chapters:

1. Hsunling Bai and **Mani Karthik**, "CO2 Greenhouse Gas Formation and Capture", Handbook of Combustion, 2nd volume, pp. 375-402. Chapter 14 - Combustion Diagnostics & Pollutants, Wiley VCH Publishers Ltd., Editors: M. Lackner, F. Winter and A. Agarwal. 2010, ISBN: 978-3-527-32449-1., 2010. http://onlinelibrary.wiley.com/doi/10.1002/9783527628148.hoc034/abstract
2. **M. Karthik**, M. Palanichamy and V. Murugesan, 'A mild, eco-friendly and efficient zeolite catalyzed synthesis of vibrindole A and bis(indolyl)methanes', Studies in Surface Science and Catalysis, Vol. 156, pp. 873-878, 2005. ISSN: 0167-2991. https://www.sciencedirect.com/science/article/abs/pii/S016729910580299X
3. Katchala Nanaji, Manavalan Vijayakumar, Ammaiyappan Bharathi Sankar and **Mani Karthik***, Highly Functionalized Nanostructured Titanium Oxide-Based Photocatalysts for Direct Photocatalytic Decomposition of NOx/VOCs, Nanostructured Materials for Environmental Applications, Editors: Subramanian Balakumar, Valérie Keller, M.V. Shankar, Springer Nature Publishers, pp, 317-393, 2021. ISBN 978-3-030-72075-9. https://doi.org/10.1007/978-3-030-72076-6
4. Aamani Nirogi, George Elsa, Manavalan Vijayakumar, Ammaiyappan Bharathi Sankar **and Mani Karthik***, MXenes and Their Composites for Supercapacitors and Hybrid Capacitors, MXenes and Their Composites: Synthesis, Properties and Potential Applications, Editors: Kishor Kumar Sadasivuni, Kalim Deshmukh, S.K. Khadheer Pasha, Tomas Kovarik, Elsevier Publishers, pp. 521-544, 2021, ISBN: 978-0-12-823361-0. https://www.elsevier.com/books/mxenes-and-their-composites/sadasivuni/978-0-12-823361-0

k. Affiliation to Professional societies:

- ***International Editorial Board Member:***
  1. *Journal of Catalyst & Catalysis*
  2. *Journal of Environmental Nanotechnology*
  3. *Journal of Engineering and Technology*
  4. *American Journal of Nano Research and Applications*
  5. *Nanomaterial Chemistry and Technology*
  6. *Journal of Modern Polymer Chemistry and Materials*

- ***Peer Reviewer:*** *More than 25 international journals*

- ***Guest Editor:*** *Materials Focus (Special Issue)-Journal of American Scientific Publishers (ASP).*

l. Awards and Honours:

- **Best scientist in Supercapacitor**, 2019, Awarded by RULA Award, Powered by World Research Council and United Medical Council.
- Biography selected and published in ***Who's Who in the World***, 31st Edition, 2014.
- **Research Fellowship received** from various research institutions such as Univ. of Torino (**Italy)**, National Science Council (NSC), NCTU (**Taiwan)**, KAIST (**South Korea)**, UGC (**India**), DAE-BRNS (**India**).
- **Selected as one of the best Indian scientists** by Indian Embassy, Seoul, South Korea for scientific interaction with ***Honourable Dr. A.P.J. Abdul Kalam, Fr. President of India*** during president visit at Seoul (Feb.2006), South Korea.
- Project Assistant Fellowship (Industrial Fellowship) received from Nagarjuna Agrichem Limited, Hyderabad, India.

m. Invited Talks/Guest Lectures

1. Emerging Materials and Technology for Energy Harvesting, Energy Conversion and Energy Storage, SERB sponsored short term course on "Introduction to Computational Fluid Dynamics with applications in Energy Research", July 26-31, 2021, Organized by Indian Institute of Technology (IIT Indore), Indore, India.
2. Recent research progress in supercapacitor technology and its potential applications, Five day faculty development programme on energy storage, February 1-5, 2021, Organized by GITAM University, Hyderabad, India.
3. Electrical Energy Storage: Supercapacitor as Next Generation Energy Storage Device, International Virtual Conference on Smart Advanced Material Science & Engineering Applications - 2020 (IVCSAMSEA-2020), 03-05, December 2020, Organised by Koneru Lakshmaiah Education Foundation (K L University), Vijayawada, Andhra Pradesh, India.
4. Recent Research and Developments in Supercapacitor Devices, AICTE Funded Short Time Training Program on Nanomaterials for Clean Energy and Environmental Applications, 23-28, November, 2020, Organised by Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamilnadu, India.
5. Electrical Energy Storage Materials and Devices for E-Mobility: Current Opportunities and Challenges, ATAL Academy Sponsored Five Days Online FDP on Energy Storage and E Mobility, 24-28, August 2020, Organised by Department of Mechanical Engineering, Syed Ammal Engineering College, Ramanathapuram, Tamil Nadu, India.
6. Technology Challenges and Progresses of Electrical Energy Storage (Webinar), A Five Day National Level E-FDP on Challenges in Chemistry and Its Applications Towards Energy Resources, 3-7 August, 2020, Organised by Department of Chemistry, Dr. M.G.R. Educational and Research Institute, Chennai, Tamilnadu, India.
7. Design and Development of Supercapacitor for Electrical Energy Storage Applications (Webinar), 31st July 2020, Organised by Department of Instrumentation and Control Engineering, College Of Engineering Pune, Pune, Maharashtra, India.
8. Advanced Carbon Materials for Energy Storage (Webinar), 25th July 2020, Organised by Chikkanna Government Arts College, Department of Chemistry, Tirupur, Tamil Nadu, India.
9. Advanced Porous Materials for Supercapacitor Applications, Online 5-days Faculty Development Program on Advanced Materials in Energy Storage Applications (Webinar), July 18-22, 2020, Organised by Department of Physics, Velammal Institute of Technology, Chennai, Tamilnadu, India.

10. Design and Fabrication of Supercapacitor as the Next Generation Energy Storage Device for Electric vehicles: Material Design to Prototype Demonstration (Webinar), 1st June, 2020, Organised by SRM University, Chennai, Tamilnadu, India.
11. Emerging Materials for Energy Conversion and Storage: Supercapacitor as Next Generation Energy Storage Device, 2nd International Conference on Advanced Materials Chemistry at the interfaces of Energy Environment and Medicine – AMCI 2020, January 30-31, 2020, Organised by Department of Chemistry, Manonmaniam Sundaranar University, Tirunelveli, Tamilnadu, India.
12. Design and Fabrication of Supercapacitor as Next Generation Energy Storage and Conversion Device, 29th November - 1st December, 2019. 2nd International Conference on Nanoscience and Nanotechnology (ICNAN '19), Organised by Centre for Nanotechnology Research, Vellore Institute of Technology, Vellore, Tamilnadu, India
13. Opportunities and current challenges of supercapacitor technologies for real-world applications, 8th March, 2019, International Conference on Supercapacitors, Energy Storage and Applications (ICSEA-2019), Organised by Centre for Materials for Electronics Technology (C-MET), Thrissur, Kerala, India.
14. Design of Nanoporous Materials: Introduction and Overview of Synthesis Methods, 7th February, 2019, Organised by Centre For Nanotechnology Research, VIT University, Vellore, Tamilnadu, India.
15. Supercapacitor: Basics to Applications, 8th February, 2019, Organised by Centre For Nanotechnology Research, VIT University, Vellore, Tamilnadu, India.
16. Nano and Nanostructured Materials for Energy Conversion and Storage, 19th April, 2018, Faculty Development Program on "Emerging trends in Nanoscience and Nanotechnology", April 17-21, 2018, Organised by Adi Shankara Institute of Engineering & Technology, Kalady, Kerala, India.
17. Nanostructured Materials for Energy Storage and Conversion, 23rd March, 2018, Organised by PSG Collage of Arts and Science, Coimbatore, Tamilnadu, India
18. Electric Mobility in India: Research and Development Initiative, Keynote speaker at National Conference on Electric Mobility, Opportunities and Challenges, 22nd February, 2018, Organised by SRM Institute of Science and Technology, Chennai, Tamilnadu, India.
19. Design, development and potential applications of Nano and Nanostructured Materials: Special Focus on Energy Storage and Conversion, 19th February, 2018, Organised by Saveetha University, Chennai, Tamilnadu, India.
20. Design and Development of Materials for Energy Storage and Conversion, Organised by Institute of Nano Science and Technology (INST), 4th October, 2017, Mohali, Punjab, India.
21. Opportunities for Better Careers, Gurunanak Institutions Technical Campus, Organised by Civil Engineering Department, 20thDecember 2017, Hyderabad, India.
22. Enhancement of Specific Heat Capacity of Alkali Metal Salts by Addition of Nanomaterials for High Temperature Thermal Energy Storage Applications, 1st International Conference on Nanoscience and Nanotechnology (ICNAN-2016), October 19-21, 2016, Organised by Center For Nanotechnology Research, VIT University, Vellore, Tamilnadu, India.
23. Effects of Nanostructured Silicate Based Material on Enhancing the Specific Heat Capacity of Nitrate Salt For Solar Thermal Energy Storage Application, International Conference on Nanomaterials and Nanotechnology, NANO15,7-10 December, 2015, Organised by KSR Group of Institution, Tiruchengode, Tamilnadu, India.
24. Synthesis and application of nanoporous materials, 8th January 2014, Department of Materials Science & Nanotechnology, Organised by Yogi Vemana University, Kadapa, India.
25. Design of nanoporous materials: synthesis and applications, Workshop: Nanoporous materials: Synthesis, study and applications, 19th March, 2013, Organised by CIC Energigune, Energy Cooperative Research Center, Spain.
26. Synthesis, characterization and applications of nanoporous materials, Organised by The Institute for Environmental Nanotechnology, 1st January 2013, Tamil Nadu, India.

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