

Scientist Biodata:

a. Name: Dr. Mani Karthik

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

c. Designation: Project Scientist (Senior Level 1)

d. Contact information:

Centre for Nanomaterials (CNM)

Office: +91-40-24452544

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e. Experience:

1ST SEP. 2016 ONWARDS: Project Scientist (Senior Level 1)

Centre for Nanomaterials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Balapur, Hyderabad 500005, **INDIA**.
Supercapacitors: Design and fabrication of nanostructured materials for Supercapacitor Device

DEC. 2014-August 2016:

Associate Researcher (Permanent)

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:**

Main Tasks: To develop efficient electrode materials for **high performance Supercapacitors and Batteries**

➤ **Solar Energy Materials - Solar Energy Storage and Conversion**

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 Energy Applications**

Properly designed nano-fluids and nano clusters have a big potential to be used as heat transfer fluids (HTFs) as well as PCM dispersions to store heat for applications in which a heat flux management up to 800 °C is required. The design of a stable PCM requires the choice of suitable dispersion media, dispersed nano particles and nano particle stabilizers.

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 and Communicated in the Journals

(★-Corresponding author)

1. D. Praveen Kumar, V. Durga Kumari, **M. Karthik***, M. Sathish and M.V. Shankar*, Shape dependence structural, optical and photocatalytic properties of TiO₂ nanocrystals for enhanced hydrogen production by photoinduced glycerol reforming, **Solar Energy Materials and Solar Cells, Accepted in Press, 27. 11. 2016.**
2. N. Lakshmana Reddy, **M. Karthik** and M.V. Shankar, Synthesis of Ag-TiO₂ nanoparticles for improved photocatalytic hydrogen production under solar light irradiation, **Advanced Porous Materials, Accepted in Press. 18. 12. 2016.**
3. S. Sakthivel, **M. Karthik** and Tata Narasinga Rao, Nanotechnology for Concentrated Solar Thermal Power Applications, **Nanotech Insights: A quarterly newsletter, Accepted, December, 2016.**
4. D. Praveen Kumar, N. Lakshmana Reddy, **M. Karthik***, B. Neppolian, J. Madhavan, M.V. Shankar, Solar light sensitized p-Ag₂O/n-TiO₂ nanotubes heterojunction photocatalysts for enhanced hydrogen production in aqueous-

- glycerol solution, **Solar Energy Materials & Solar Cells**, Vol. 154, pp. 78-87, 2016.
5. Dharani Praveen Kumar, Nagappagari Lakshmana Reddy, Basavaraju Srinivas, ValluriDurgakumari, Vladimir Roddatis, Oleksandr Bondarchuk, **Mani Karthik***, Yasuro Ikuma, Muthukonda V. Shankar, Significance of nanocrystalline structure and morphology on the photocatalytic activity of Cu_xO -modified TiO_2 nanomaterials for unprecedented hydrogen production under solar irradiation, **Solar Energy Materials & Solar Cells**. Vol. 146, pp. 63-71, 2016.
 6. Iñigo Ortega-Fernández, Abdessamad Faik, **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
 7. D. Praveen Kumar, N. Lakshmana Reddy, M. MamathaKumari, B. Srinivas, V. Durgakumari, B. Sreedhar V. Roddatis, O. Bondarchuk, **M. Karthik**, B. Neppolian and M.V. Shankar, Cu_2O -Sensitized TiO_2 Nanorods with nanocavities for highly efficient photocatalytic hydrogen production under solar irradiation, **Solar Energy Materials & Solar Cells**, Vol. 136, pp. 157-166. 2015.
 8. **M. Karthik***, A. Faik, P. Blanco-Rodríguez, J. Rodríguez-Aseguinolaza and B. D'Aguanno, Facile and efficient method for preparation of erythritol-graphite composite PCM with enhanced thermal conductivity for thermal energy storage applications, **Carbon**, Vol. 94, pp. 266-276, 2015.
 9. **M. Karthik***, A. Faik, S. Doppiu, V. Roddatis and B. 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.
 10. **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.
 11. 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.
 12. 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.
 13. 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.
 14. **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. (*Manuscript Viewed/downloaded: 650 times in one year*).
 15. **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.
16. 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.
 17. P. Shanthy, **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.
 18. 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.
 19. 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.
 20. 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.
 21. AgneseGiacomino, OrnellaAbollino, MeryMalandrino, **M. Karthik** and VelayuthamMurugesan, '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.
 22. **M. Karthik**, L.Y. Lin and H. Bai, 'Bifunctional mesoporous Cu-Al-MCM-41 materials for simultaneous catalytic abatement of NO_x and VOCs', **Microporous and Mesoporous Materials**, Vol. 117, pp. 153-160, 2009.
 23. Y. Chen, **M. Karthik** and H. Bai, 'Modification of CaO by organic alumina precursor for enhancing cyclic capture of CO₂greenhouse gas', **Journal of Environmental Engineering-American Society of Civil Engineers (ASCE)**, Vol. 135, pp. 459-464, 2009.
 24. 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.
 25. Yan-Huei Jan, Liang-Yi Lin, **M. Karthik** and Hsunling Bai, 'Titanium dioxide/zeolite catalytic adsorbent for the simultaneous removals of NO and acetone vapors', **The Journal of the Air & Waste Management Association (A&WMA)**, Vol. 59, pp. 1186-1193, 2009.
 26. 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.
 27. **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.

28. **M. Karthik**, C.J. Magesh, P.T. Perumal, M. Palanichamy, Banumathi Arabindoo and V. Murugesan, 'Zeolite catalysed ecofriendly synthesis of vibrindole A and bis(indolyl)methanes', **Applied Catalysis A: Gen.**, Vol.286, pp. 137-141, 2005.
29. 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. 155-161, 2005.
30. 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.
31. C.J. Magesh, R. Nagarajan, **M. Karthik** and P.T. Perumal, 'Synthesis and characterisation of bis(indolyl)methanes, tris(indolyl)methanes and new diindolylcarbazolymethanes mediated by Zeokarb-225, a novel, recyclable, eco-benign heterogeneous catalyst', **Applied Catalysis A: Gen.**, Vol. 266, pp. 1-10, 2004.
32. **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.
33. **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 *tert*-butylation of phenol using isobutanol', **Applied Catalysis A: Gen.**, Vol. 268, pp. 139-149, 2004.
34. **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.
35. **M. Karthik***, A. Faik, and B. D'Aguanno, Facile and Low Cost Fabrication of Paraffin Wax-Graphite Foam Phase Change Composite for Low-Temperature Thermal Energy Storage Applications. **Applied Energy**, Under review, 2016.

h. Papers Presented in the Conferences:

1. **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**.
2. 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**.
3. Josu López-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**.

4. Josu López-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**.
5. Iñigo Ortega-Fernández, Abdessamad Faik, **Karthik Mani**, Javier Rodríguez-Aseguinolaza and Bruno D'Aguanno, 'Experimental investigation of solid by-product as sensible heat storage material: characterization and corrosion study', 21st SolarPACES Conference, October 13-16, 2015, Cape Town, **South Africa**.
6. **Mani Karthik**, Abdessamad Faik, Bruno D'Aguanno, Alexandre Godin, Marie Duquesne, Elena Palomo del Barrio, Cédric Lebot and Jérôme Malvestio, '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**.
7. **Mani Karthik**, 'Porous structures for thermal conductivity enhancement', SAMSSA Workshop, March 17-18, 2015, CIC Energigune, Vitoria - Gasteiz, **Spain**.
8. **Mani Karthik**, Abdessamad Faik, 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**.
9. **Mani Karthik**, Abdessamad Faik, 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**.
10. **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, September 7-11, 2014, Melia Castilla, Madrid, **Spain**.
11. D. Praveen Kumar, M.V. Shankar, M. Mamatha Kumari, N. Lakshmana Reddy, B. Srinivas, V. Durgakumari, B. Neppolian, Vladimir Roddatis and **Mani Karthik**, 'Comparison of hydrogen production efficiency with different nanostructures of $\text{Cu}_x\text{O}/\text{TiO}_2$ catalyst under solar light irradiation', The 3rd international symposium on advanced electron microscopy for catalysis, September 3-6, 2014, Monastery, **Germany**.
12. 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**.
13. 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**.
14. **Mani Karthik** and Stefania Doppiu, '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**.

15. C. Sathiskumar, **M. Karthik**, A. JafarAhamed, D. Saravanan, and S. Karthikeyan, 'Synthesis of Multi-Walled Carbon Nanotubes by Spray Pyrolysis using Tire Pyrolysis Oil as Starting Material', The Annual International World Conference on Carbon 2013, July 14-19, 2013, Copacabana, Rio de Janeiro, **Brazil**.
16. **Mani Karthik**, Edurne Redondo, Eider Goikolea, Stefania Doppiu 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**.
17. 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**.
18. 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**.
19. **Mani Karthik**, Liang-Yi Lin and Hsunling Bai, 'Mesoporous Cu-MCM-41 and Cu-Al-MCM-41 catalysts for the simultaneous abatement of NOx and VOCs in exhaust gas stream', Proceeding of 4th conference on Environmental Protection and Nanotechnology, May 25, 2007, National Chung Hsing University, Taichung, **Taiwan**.
20. Chin-Te Hung, Hsunling Bai, **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**.
21. Hsunling Bai, 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**.
22. **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**.
23. **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**.
24. **M. Karthik**, A.K. Tripathi, N.M. Gupta, M. Palanichamy and V. 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**.
25. 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**.
26. **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.**
27. **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 Recent Advances in Molecular Interactions (NCRAMI-2004), Mar. 26-27, 2004, Department of Physics, PSG College of Arts and Science, Coimbatore, **India.**
 28. **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.**
 29. **M. Karthik**, A. Vinu, A.K. Tripathi, N.M. Gupta, M. Palanichamy, Banumathi Arabindoo 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.**
 30. **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**, "Process for the preparation of flexible meso and macroporous carbon foams, EP2921468 (A1), Published in 2015.09.23.
2. **Mani Karthik**, Abdessamad Faik and Stefania Doppiu, "Process for the preparation of hierarchically meso and macroporous structured materials", WO2014060508 (A1), Published in 2014.04.24.
3. **Mani Karthik**, Abdessamad Faik and Stefania Doppiu, "Process for the preparation of hierarchically meso and macroporous structured materials", EP2909134 (A1), Published in 2015.08.26.
4. **Mani Karthik**, Abdessamad Faik and Stefania Doppiu, "Process for the preparation of hierarchically meso and macroporous structured materials", US2015284252 (A1), Published in 2015.10.08.
5. **Mani Karthik**, Abdessamad Faik and Stefania Doppiu, "Process for the preparation of hierarchically meso and macroporous structured materials", IN4202DEN2015 (A), Published in 2015.10.16.
6. **Mani Karthik**, Abdessamad Faik and Bruno D'Aguanno, "Preparation process for enhancing the specific heat capacity of alkali metal salts by addition of nanoporous materials", European Patent application no. P135450EP00. 2016.

j. Contribution to Books:

1. Hsunling Bai and **Mani Karthik**, “CO₂ Greenhouse Gas Formation and Capture”, Hand book 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.

<http://onlinelibrary.wiley.com/doi/10.1002/9783527628148.hoc034/abstract>

k. Affiliation to Professional societies:

1. **International Editorial Board Member:**

- *Journal of Catalyst & Catalysis* (<http://stmjournals.com/editorial-team-Journal-of-Catalyst-and-Catalysis.html>)
- *Journal of Environmental Nanotechnology*

2. **Peer Reviewer:** More than 15 international high impact factor journals

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

l. Awards and Honours:

1. Biography selected and published in *Who's Who in the World*, 31st Edition, 2014.
2. **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**).
3. **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.
4. Project Assistant Fellowship (Industrial Fellowship) received from NagarjunaAgrichem Limited, Hyderabad, India.

m. Invited Talks/Guest Lectures

1. 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, Centre For Nanotechnology Research, VIT University, Vellore, Tamilnadu, **India**.
<http://www.vit.ac.in/files/icnan2016/img/ICNAN'16%20Brochure.pdf>
2. 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, KSR Group of Institution, Tiruchengode, Tamilnadu, India.
http://www.nano15.ksret.ac.in/Template_files/Download/nano15_second_circular.pdf
3. Synthesis and application of nanoporous materials, 8th January 2014, Department of Materials Science & Nanotechnology, Yogi Vemana University, Kadapa, India.
4. Design of nanoporous materials: synthesis and applications, Workshop: Nanoporous materials: Synthesis, study and applications, 19th March, 2013, CIC Energigune, Energy Cooperative Research Center, Spain.
http://www.cicenergigune.com/uploads/noticias/documentos/en/19_March.pdf

5. Synthesis, characterization and applications of nanoporous materials, 1st January 2013, The Institute for Environmental Nanotechnology, Tamil Nadu, India.

n. Photograph

