Kaliyan Hembram
Scientist-D

Centre for Nanomaterials
International advanced Research Centre for Powder Metallurgy and New Materials (ARCI),
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Education background:

B.E. (Metallurgical and Materials Engineering) MNIT, Jaipur (2002)

Ph.D. (Metallurgical Engineering and Materials Science), IIT-Bombay, Mumbai (2009- till date)

Work Experience:

Scientist-D, ARCI, Hyderabad: 2012- till date

Scientist-C, ARCI, Hyderabad: 2007 –2012

Scientist-B, ARCI, Hyderabad: 200-2007

Engineer, IRC Engineering Services Pvt. Ltd, New Delhi: 2002-2003

Research Interest :

- ZnO Varistor
- Synthesis and characterization of nanopowders by combustion, mechanical milling, electrical explosion of wire, flame spray pyrolysis for catalysis and Li-Ion battery and varistor applications
- Synthesis-structure-property correlations in materials

List of publications:

1. **K. Hembram**, R.Vijay, Y.S. Rao and T.N. Rao, Doped nanocrystalline ZnO powder for non-linear resistor application by spray pyrolsysi method, , Journal of Nanoscience and Nanotechnology 9, 4376-4382 (2009)
2. R. Subasri, M. Asha, **K. Hembram**, G.V.N. Rao and T.N. Rao, Microwave Sintering of Doped Nanocrystalline ZnO and Characterization for Varistor Applications, Material chemistry and physics Volume 115, Issues 2-3, 15 June 2009, Pages 677-684
3. **K. Hembram**, D. Sivaprahasam and T.N. Rao, Combustion synthesis of doped nanocrystalline ZnO powders for varistors applications, Journal of the European Ceramic Society 31 (2011) 1905–1913**. Listed in hottest 25 articles in Elsevier, Material Science, Journal of the European Ceramic Society, April to June 2011**.
4. **K. Hembram**, D. Sivaprahasam, K.Wagner and T.N. Rao, Large-scale manufacture of ZnO Nanorods by Flame Spray Pyrolysis, Journal of Nanoparticle Research,15(2013), 1-11.
5. R. Kumar, S. Anandan, **K. Hembram**, and T. N. Rao, Efficient ZnO-Based Visible-Light-Driven Photocatalyst

for Antibacterial Applications, ACS Applied Materials & Interfaces, 6 (2014) 13138–13148.

6. A. Sangeetha, L. Samyuktha , AVN Swamy, A Kapley,K Jamil, T.N. Rao and **K. Hembram**, Biological interactions in vitro of zinc oxide nanoparticles of different characteristics, IOP, Materials Research Express 1 (2014) 035041.
7. R. Kumar, D. Navadeepthy, **K. Hembram**, T. N. Rao and S. Anandan, Visible-light-induced photocatalytic disinfection of e-coli pathogens with Fe^{3+}-grafted ZnO nanoparticles, Energy and Environmental Focus, 2015, 4,1-7.
8. **K.Hembram**, T.N.Rao, R.S.Srinivasa and A.R.Kulkanri, High performance varistor made from doped ZnO nanopowders by pilot-scale flame spray pyrolyser: sintering, microstructure and properties, Journal of the European Ceramic Society, 2015, 1-10 (accepted).

List of patents:

1. An improved process for the preparation doped ZnO nanopowder useful for the preparation of Varistor and an improved process for the preparation for Varistor employing the said nanopowder" **K. Hembram**, T. N. Rao and R. Sundaresan, Indian patent No. 254913.
2. An improved method for producing ZnO nanorod, **K. Hembram**, D. Sivaprahasam and T.N.Rao, Indian Patent Application No. 2759/DEL/2010 dated on 19/11/2010.
3. Improved composition and method of preparation of high perforamce ZnO varistors, **K. Hembram**, A.R. Kulkanri, R. S. Srinivasa and T.N.Rao, Indian Patent.

List of Lecture delivered/ poster presentation:

1. Presented a paper "Large Scale Manufacture of Doped ZnO Nanopowders for Varistor Applications by Top-down and Bottom-up Approach" in Regional Conference of young scientist on the topic " Nanoscience and Nanomaterials, during February 18-20, 2015, JNCASR, Bangalore, India.

2. Presented a paper on " Shape Control Synthesis of ZnO Nanopowders and for Varistor Applications by Flame Spray Pyrolysis," in MRS Fall Meeting and Exhibitions during 30th Nov.-5th Dec 2014, Boston, USA.

3. Presented paper on " Nanotechnology in Energy" in Asia Nanotech Camp 2012, Beijing, China.

4. Presented a paper on " Combustion synthesis of doped ZnO nanopowder for varsitors applications, in International contest of applications in nano-micro technology(I-CAN) 2012, Beijing, China

5. Presented paper on "Synthesis and Characterization of Catalyst free Bulk Pure ZnO Nanorods by Flame Spray Pyrolysis" at International Conference Nanoscience and Technology(ICONSAT), January 20-23, 2012, organized by ARCI, Hyderabad, India.

6. Presented paper on "Doped nanocrystalline ZnO powder for Varistor applications by spray pyrolysis method" at 2nd International meeting on development in materials, processes and applications of nanotechnology (MPA-08) held at University of Cambridge, Cambridge, UK.

7. Presented poster paper on "Doped nanocrystalline ZnO powder for Varistor application" at 6th International conference on nanoscience and nanotechnology (Nano-2006), IISc, Bangalore, India

8. Presented poster paper on "Interrelationship between microstructure and dielectric and electrical properties in ZnO" at International conference on Nano-materials for Electronics (ICNME-06), Pune, India.

9. Presented poster paper on " Nano alumina synthesis by electrical explosion of wire" at International Symposium on Frontlines in Design of Materials (FMD-2005), IIT Madras, Chennai, India.

10. Presented poster paper on " Nano alumina synthesis by electrical explosion of wire" at National Seminar on Powder Metallurgy 2007, Hyderabad, India.

Affiliation to Professional societies

1. Life Member of Indian Institute of Metal
2. Life Member of Material Research Society of India
3. Member of American Ceramic Society
4. Member of Material Research Society

Awards & Honors

1. One paper (K. Hembram et al) is listed in hottest 25 articles in Elsevier, Material Science, Journal of the European Ceramic Society, April to June 2011.
2. Best poster contribution award at International contest of applications in nano-micro technology(I-CAN) 2012, Beijing, China.
3. Golden best presentation award at Asia Nanotech Camp 2012, Beijing, China.

Reviewer for International Journals

1. Journal of Nanoscience and Nanotechnology
2. International Journal of Physical Sciences
3. Journal of Nanoparticle Research