Chinnakonda S. GOPINATH, FASc

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Date of Birth: June 04, 1964 Male, Indian, Married with two children

http://www.researcherid.com/rid/B-5518-2009 and http://scholar.google.co.in/citations?user=AT93X3IAAAAJ

Education

- Ph.D. Solid State Chemistry, Indian Institute of Technology (IIT), Madras, 1993. Thesis title is 'Photoelectron spectroscopic studies of high T_c cuprate superconductors'. Recipient of the National Superconductivity Research Fellowship to carry out doctoral work.
- M.Sc. Chemistry with Physical Chemistry specialization at Madurai Kamaraj University, India, 1986. Carried out a dissertation work on 'Emulsion Polymerization'. Scored the highest marks (or First rank) and was awarded a Gold medal for the same.
- B.Sc. Chemistry, Madurai Kamaraj University, India, 1984.

Awards

- 1. Elected *Fellow of the Indian Academy of Science, Bangalore* from 2011.
- Visiting CNRS Professor at UCCS, Univ. Lille1, Lille, France between Sept. Nov. 2010. Also awarded Professorship from EU's Erasmus-Mundus sponsored ASC course for teaching one month at Univ. Lille 1 on May 2012.
- 3. Recipient of the **Alexander von Humboldt** (**AvH**) Research Fellowship from AvH Foundation, Germany on 1995.
- 4. Recipient of **Bronze medal** from CRSI on 11th National Symposium in Chemistry at NCL, Pune, Feb. 2009.
- 5. Recipient of the **Scientist of the year Award** from NCL, Pune on 2006 and **Dr. S.S. Deshpande National Award** from Holkar college on 2013.
- 6. About 2900 citations with an h-factor = 32.
- Scored the highest mark and received the Dr. T.P. Meenakshisundaranar Gold Medal for securing the <u>First Rank</u> in M. Sc. (Chemistry) at Madurai Kamaraj University on 1986.

Professional Experience and Major Accomplishments

1. Initiated serious surface science studies, especially photoemission studies, of catalysts, inorganic, polymeric, magnetic and electronic materials at NCL from 2000. Currently Head of the Center of Excellence on Surface Science at NCL, Pune.

- 2. Project on fabrication of Molecular beam instrument was successfully completed and nitric oxide reduction on Pd metal surface is currently explored. This is a collaborative research project between NCL, India and Fritz-Haber Inst., Berlin. **Molecular beam instrument is fully developed independently in my group at NCL** and employed for vapor-phase reactions on metal surfaces.
- 3. New materials prepared for solar energy harvesting through water splitting and DSSC.
- 4. Mechanistic details of catalytic reactions under *in-situ* conditions by IR spectroscopy and the same for catalyst development.
- 5. Collaborated with international scientists from USA, Germany, France, Japan, Korea, Australia and several institutions within India.

Interests

*..Interested to tackle important chemical physics problems.

*..Surface science studies on industrially important materials.

Invited Talks (Recent)

- 1. C. S. Gopinath, Electronic Structure and Morphology of N-doping in ZnO and TiO₂, IUMRS-ICEM 2012, Yokohama, Japan, Sept. 23-28, 2012 (Keynote lecture).
- 2. C. S. Gopinath, Solar H₂ generation with electronically integrated $TiO_{2-x}N_x$ + Au composite and Revisit to CO oxidation on modified Pd(111) Surfaces, Keio University, Japan, Sept. 25, 2012.
- 3. C. S. Gopinath, An electronically integrated $TiO_{2-x}N_x$ + Au nanocomposite for solar H₂ generation, NIMS, Japan, Sept. 24, 2012.
- C.S. Gopinath, Surface Modification and its Influence in CO oxidation on Pd-surfaces, and Nanocomposites of Mesoporous Titania and Au ± Graphene for Solar Energy Conversion, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, June 28, 2012.
- 5. C.S. Gopinath, Mesoporous Nano Au-TiO_{2-x}N_x composite: *Psuedo* 3D Material with Visible Light Photocatalytic Activity for H₂ Generation, International Conference on Hydrogen Production (ICH2P), Seoul, June 24-27, 2012.
- 6. C.S. Gopinath, *Psuedo-3D* Mesoporous γ -Al_{2-x}M_xO_{3±y} (M = Ti through Ga), Nanocomposites of mesoporous titania and Au/graphene, and Ambient Pressure Photoelectron Spectroscopy (AP-PES): Recent Research Efforts in Gopi's Group at NCL, Pune Univ. Sci. Tech. Lille 1, Lille, France, May 25, 2012.
- 7. Two talks to be delivered at 241^{st} ACS National Meeting, Anaheim, California on March 27-31, 2011 on (a) Electronic decoupling of surface layers and its influence in oxidation catalysis: More wine in old bottle, **and** (b) Combustion synthesis to incorporate Nitrogen in ZnO and TiO₂ and their applications in solar energy harvesting.
- 8. C. S. Gopinath, Simple Synthesis Strategy to Incorporate Nitrogen in ZnO and TiO_2 and Their Applications in Solar Energy Harvesting, 3^{rd} International symposium on materials chemistry, BARC, Mumbai, Dec. 7-11, 2010.
- 9. C. S. Gopinath, Development of New Materials for Solar Energy Harvesting: Nitrogen doped ZnO and TiO₂, Solid solution of GaN in ZnO, Mesoporous TiO₂, Van 't Hoff Institute of Molecular Sciences, Univ. Amsterdam, Nov.15, 2010.
- 10. C. S. Gopinath, Band Gap Engineered ZnO-based Multifunctional Solid Solution Materials for Visible Light Photocatalysis, Development of novel materials for hydrogen production and photocatalysis (DNHP-2010), 26-27th March, 2010 at IMMT, Bhubaneswar.

Editorial

- 1. Editorial board Member, Journal of Chemical Sciences, Springer, from Jan 2012.
- 2. About 50 research articles are reviewed annually, sent by the renowned journals from top-publishers, ACS, Wiley, RSC. Elsevier, Springer etc.
- 3. *Regularly review research proposals* from different funding agencies (DST, IFCPAR, CSIR etc.).

Research Guidance Doctoral Ph.D. Theses

Eleven students are currently working towards Ph.D. at different stages.

- **8.** Edwin S. Gnanakumar, **Synthesis and Molecular Properties of New MgCl₂ based Molecular Adducts Towards Catalytic Polyolefin Production,** Univ. Pune, Submitted in 2013.
- 7. K. S. Thushara, MgCl₂.nROH: New Molecular Adducts for the Preparation of TiCl_x/MgCl₂ Catalyst for Olefin Polymerization (R = isopropyl, isobutyl, 2-butyl, tertiary butyl), AcSIR, Submitted on 10/5/2013 and degree awarded on 9/13. <u>She is</u> the first student to get PhD degree in Chemistry and second student to get PhD degree among all disciplines from entire AcSIR.
- 6. Kumarsrinivasan Sivaranjani, Synthesis, characterization and application of hetero atom doped mesoporous TiO₂, Univ. Pune, March 2013.
- 5. Sankaranarayanan Nagarajan, Three way catalytic converter reactions on palladium surfaces, Univ. Pune, March 2011.
- **4.** Maitri Mapa, **Synthesis, characterization and Catalytic Studies of heteroatoms incorporated ZnO,** Univ. Pune, August 2009.
- **3.** Kandasamy Thirunavukkarasu, **Molecular beam studies of nitric oxide (NO)** reduction reactions on Pd(111) surfaces, Univ. Pune, July 2007.
- 2. Munusami Vijayaraj, Heteroatom alkylation reactions of aromatic compounds over metal oxides, Univ. Pune, December 2006.
- 1. Thomas Mathew, 'Synthesis and characterization of mixed oxides containing cobalt, copper and iron and study of their catalytic activity', Univ. Pune, Oct. 2003.

Many M.Tech. and M.Sc Chemistry projects have been completed under my guidance.

Sponsored Projects and Industrial Consultancy:

- 1. Involved as a key member in a project sponsored by General Electric, USA to explore '**The loss of antistatic activity in polycarbonates**'. (Completed, 9/03)
- 2. Principal Investigator (from India) in a collaborative project with Prof.Dr. H.-J.Freund and Dr.J.Libuda from Dept. Chemical Physics, Fritz-Haber Inst., Berlin, on 'The mechanism and kinetics of NO reduction reactions on noble metal surfaces From single crystal surface to supported model catalysts' and sponsored by Volkswagen Foundation. This project was partly supported by Alexander von Humboldt Foundation through instrument donation. This was successfully completed on 12/04 and the collaboration continues.
- 3. Principal Investigator in an in-house project on "**Nitric oxide reduction reactions on Rh and Pd metal surfaces in a molecular beam setup**" (Completed, 3/05).
- 4. Principal investigator in two projects on "Photoemission and other relevant spectroscopic studies of chiral catalysts" and "The roles of metal, ligand and support of Asymmetric

Hydrogenation Catalysts through Spectroscopic and Structural Investigations" sponsored by Reliance Industries Ltd (RIL) with Dr. S. Bhaduri. (Completed)

- PI (from India) in a bilateral project with Prof. Mike Bowker, Cardiff Univ., on "Towards an understanding of NO_x management for ethanol addition to gasoline" supported by Royal Society – British Council. (9/06-9/09-completed).
- 6. PI in a project on "Exploration of magnesium chloride coating on surfaces of catalytic support materials" sponsored by RIL with Dr. S. Bhaduri (11/06 5/08) (completed).
- 7. Co-PI in a project on "Catalytic hydrogenation of bisulfite formaldehyde to sulphoxylate formaldehyde" sponsored by Transpek-Silox Ltd, Baroda (1/07 7/08) (completed).
- 8. PI in a project on "Synthesis and Characterization of Novel Catalytic Support Materials" sponsored by RIL with Dr. S. Bhaduri (2/08 7/10) (completed).
- 9. Co PI in a project on **A novel and practical synthesis of natural phospholipids with polyol head-groups**, sponsored by NCL Pune (11/08-9/10) (completed).
- 10. Principal Investigator in a project on **Exploration of ZnO-based materials towards** photocatalytic water splitting, by NCL Pune (4/10-3/11) (completed).
- 11. Principal Investigator in a project on Electrically connected nano-mesoporous TiO₂ for solar energy harvesting applications by NCL Pune (4/11 3/12) (completed).
- 12. PI in an ongoing long-term project on **Solar energy to Chemical energy** at NCL, by CSIR (From 10/11 onwards). Co-coordinator to the above project at national level.
- 13. Co-investigator in **Dye-sensitized solar cells and quantum dot sensitized solar cells** at NCL, MNRE. (From 10/11 onwards).
- 14. PI in **Molecular Beam Studies of Environmental Catalytic Reactions**, by BRNS (From 12/11 onwards). Dr PD Naik is Principal Coordinator from BARC.
- 15. PI to setup **Center for Surface and Interface Science Research (CSISR)** at NCL, Pune between 2012 and 2017, with an emphasis on operando methods to simulate real-world working condition of materials.
- 16. PI in **Development of integrated molecular beam-FTIR spectrometer for in-situ studies of catalytic reactions on modified Pd surfaces**, by SERB, DST from Jan 2014 onwards.

Professional Affiliations:

Life member of Chemical Research Society of India (CRSI) Life member of Catalysis Society of India (CSI)