

## Curriculum Vitae

**P. Sasikumar**

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### Academic Records:

**Ph.D.** (July 2003 – November 2008): Indian Institute of Technology - Kanpur, Kanpur, India.

**Thesis title:** Synthesis and structures of metal phosphonates and phosphates

**Supervisor:** Prof. V. Chandrasekhar, Department of Chemistry, IIT-Kanpur

**M.Phil.** (July 2001 – November 2002): Pondicherry University, Pondicherry, India.

**Dissertation title:** Synthesis and Characterization of bi-coppercomplex of [11, 12] bi [4, 5, 9, 14]-tetraaza-Benzo[b]triphenylenyl.

**Supervisor:** Prof. R. Venkatesan, Pondicherry University, Pondicherry, India.

**M.Sc.** (July 1999 – April 2001): Ramakrishna Mission Vivekananda College affiliated to University of Madras, Chennai, India.

**B.Sc.** (July 1996 – April 1999): Government Thirumagal Mills College affiliated to University of Madras, Gudiyattam, India.

### Fellowships and Awards:

- ❖ Junior Research Fellowship from Council of Scientific and Industrial Research (CSIR), New Delhi, India (2003-2004)
- ❖ Senior Research Fellowship, from Council of Scientific and Industrial Research (CSIR), New Delhi, India (2005-2007)
- ❖ Senior Research Fellowship, IIT-Kanpur, Kanpur, India, (2008)
- ❖ Alexander von Humboldt Fellowship, Germany, (2010)

## **Professional experience:**

**Assistant Professor.** (November 2012 – present): Department of Chemistry, Presidency University, Kolkata, India.

**Post-Doctoral associate.** (February 2010 – July 2012): Johann Wolfgang Goethe Universität, Frankfurt am Main, Germany.

**Post-Doctoral associate.** (April 2009 – January 2010): The University of Alabama, Tuscaloosa, U. S. A.

**Senior Research Associate.** (December 2008 – March 2009): Indian Institute of Technology - Kanpur, Kanpur, India.

**Research Assistant.** (Jan 2003 – June 2003): Indian Institute of Technology - Kanpur, Kanpur, India.

## **Broad Area of Research**

- ❖ Organometallic and Inorganic chemistry

## **Research Experiences:**

- ❖ **Phosphonate and Phosphate**

In my doctoral research, I have involved in the synthetic development of new phosphonic acids and phosphate ligands and the interaction of these ligands with various main group-, transition metal ions and organotin precursors. The metal aggregates thus prepared were structurally and spectroscopically characterized. These aggregates were shown to be good single molecular precursors for material purpose. Ceriumphosphonate were utilized as catalyst for prepare pharmaceutically valuable functionalized dihydropyrimidines (three-component Biginelli reaction). All the di-nuclear metal aggregates were found to be artificial nucleases.

- ❖ **Metal Thiolates**

In my post-doctoral research at Alabama University, I have synthesized various thiol-based ligands and the interaction of these ligands with soft-metals like Lead, Cadmium and Zinc. Among them lead aggregate were found to be semiconductor.

### ❖ **Organoborane**

In my current post-doctoral research I have prepared several Donor-Acceptors, Donor-Pi-Acceptors molecule by using diarylamine (Lewis base) as donor and diarylborane (Lewis acid) as acceptor. Thus prepared molecules were well characterized structurally and spectroscopically. All of them were shows interesting optoelectronic properties in both solution and solid state.

### **Teaching Experiences:**

- ❖ Post Graduate: Course MCT-5: Chemistry of elements; special features
- ❖ Under Graduate: Course CHT-2: Chemical periodicity
- ❖ Under Graduate: Course CHP-2: Inorganic chemistry practical
- ❖ Under Graduate: Course CHT-6: Chemistry of S- and P-block elements
- ❖ Under Graduate: Course CED-5: Comparative study of P-block elements
- ❖ Under Graduate: Course CED-2: Inorganic Practical – 1 Qualitative analysis
- ❖ Under Graduate: Course CED-5: Inorganic Practical – 2 Quantitative analysis
- ❖ Teaching assistant (TA) for M.Sc. Chemistry lab courses at IIT Kanpur.

### **Skills and Experiences**

- ❖ Synthesis, purification and characterization of main group, transition metal, organometallic and inorganic compounds.
- ❖ Handling air and moisture sensitive compounds using the standard Schlenk and Glove-box techniques
- ❖ Handling the synthesis of organic and organometallic compounds from milligram to multi-gram scale.
- ❖ Mass, NMR and High resolution multi-nuclear NMR ( $^{13}\text{C}$ ,  $^{11}\text{B}$ ,  $^{19}\text{F}$ ,  $^{31}\text{P}$ ,  $^{29}\text{Si}$ ,  $^{119}\text{Sn}$ , COSY, HMQC and HMBC) spectral analysis.
- ❖ UV, IR, Fluorescence, Cyclic Voltammetric, SEM, EDX, TEM, TGA and DSC Techniques
- ❖ Single crystal X-ray structural solution and analysis using SHELXTL, WINGX, SIR92, SIR97, DIAMOND, ORTEP and PLATON

### **Research Interest**

- ✓ Design of new organometallic material having novel optoelectronic property.
- ✓ Design of multi-dentate ligand for making transition and organometallic aggregates, which is useful for catalysis and materialistic.

## **List of Publications:**

- 1) Dinuclear metal phosphonates and -phosphates, Vadapalli Chandrasekhar, **Palani Sasikumar**, Tapas Senapati, Atanu Dey, *Inorg. Chim. Acta.* **2010**, 363(2), 2920-2928
- 2) Assembly of Tetra, Di and Mononuclear Molecular Cadmium Phosphonates using 2,4,6-Triisopropylphenylphosponic acid and Ancillary Ligands, Vadapalli Chandrasekhar, **Palani Sasikumar**, Ramamoorthi Boomishankar, *Dalton Trans.* **2008**, 5189-5196
- 3) First Example of a Molecular Ce(III) Phosphonate. Synthesis, Structural Characterization and Catalytic activity of  $[\text{Ce}_2\{\text{Ph}_3\text{CPO}_2(\text{OEt})\}_4(\text{NO}_3)_2(\text{H}_2\text{O})_4]$ . Structural Diversity of  $\text{Ph}_3\text{CPO}_3\text{H}_2$ , Vadapalli Chandrasekhar, **Palani Sasikumar**, *Dalton Trans.* **2008**, 6475-6480
- 4) Formation of a double-bicapped hexatin phosphate cage by a de-arylation reaction. Synthesis and structure of  $[(\text{PhSn})_6(\mu\text{-OH})_2(\mu_3\text{-O})_2(\mu\text{-OEt})_4\{(\text{ArO})\text{PO}_3\}_4]$  (Ar=2,6-*i*-Pr<sub>2</sub>C<sub>6</sub>H<sub>3</sub>), Vadapalli Chandrasekhar, **Palani Sasikumar**, Pakkirisamy Thilagar, *Organometallics* **2007**, 26(18), 4386-4388
- 5) Assembly of lipophilic tetranuclear (Cu<sub>4</sub> and Zn<sub>4</sub>) molecular metallophosphonates from 2,4,6-triisopropylphenylphosponic acid and pyrazole ligands, Vadapalli Chandrasekhar, **Palani Sasikumar**, Ramamoorthi Boomishankar, Ganapathi Anantharaman. *Inorg. Chem.* **2006**, 45(8), 3344-3351
- 6) Multi-functional architectures supported on organostannoxane scaffolds, Vadapalli Chandrasekhar, **Palani Sasikumar**, Puja Singh, Ramalingam Thirumoorthi, Tapas Senapati, *J. Chem. Sci.* **2008**, 120, 105-113
- 7) Chemically cross-linked polysilanes as stable polymer precursors for conversion to silicon carbide, Vadapalli Chandrasekhar, Venkatasubbaiah Krishnan, **Palani Sasikumar**, Varanasi S. R. Murthy, *J. Inorg. Organomet. Polymer. Mater.* **2007**, 7 (2), 439-446
- 8) Stannoxanes and phosphonates: New approaches in organometallic and transition metal assemblies, Vadapalli Chandrasekhar, Kandasamy Gopal, Loganathan Nagarajan, **Palani Sasikumar**, Pakkirisamy Thilagar, *J. Chem. Sci.* **2006**, 120, 455-462
- 9) Synthesis, structure and reactivity of hydrated and dehydrated organotin cations, Vadapalli Chandrasekhar, Ramamoorthi Boomishankar, Kandasamy Gopal, **Palani Sasikumar**, Puja Singh, Alexander Steiner, Stefano Zacchini, *Eur. J. Inorg. Chem.* **2006**, 4129-4136

- 10) Multi-site coordination ligands assembled on organostannoxane supports, Vadapalli Chandrasekhar, Pakkirisamy Thilagar, **Palani Sasikumar**, *J. Organomet. Chem.* **2006**, 691(8), 1681-1692
- 11) Mononuclear metal phosphinates with ancillary pyrazole ligands. Synthesis and X-ray crystal structures of  $[M(\text{Ph}_2\text{PO}_2)_2(3,5\text{-DMPZ})_2]$  (M = Co, Zn), Vadapalli Chandrasekhar, Ramamoorthi Boomishankar, **Palani Sasikumar**, Loganathan Nagarajan, Andrew. W. Cordes, *Z. Anorg. Allg. Chem.* **2005**, 63 (13-14), 2727-2732
- 12) Organooxotin assemblies from Sn-C bond cleavage reactions, Vadapalli Chandrasekhar, Kandasamy Gopal, **Palani Sasikumar**, Ramalingam Thirumoorthi, *Coord. Chem. Rev.* **2005**, 249 (17-18), 1745-1765

### **Conference and Symposium Proceedings:**

- 1) Lipophilic Molecular Metallophosphonates. Vadapalli Chandrasekhar, **Palani Sasikumar**, Balasubramanian Murugesu Pandian. 10<sup>th</sup> CRSI National Symposium in Chemistry, Delhi University, New Delhi, India, on **Feb 2007**
- 2) Assembly of new structural forms of organotin clusters by using phosphorus-based ligands. Vadapalli Chandrasekhar, **Palani Sasikumar**. An Indo-German Symposium, IIT Kanpur, Kanpur, India, on **Oct 2007**