

## Dr. Thangavel Vijayakanth

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Research Fellow

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### Education

- **Doctor of Philosophy in Chemistry (Ph.D.)**, Department of Chemistry, Indian Institute of Science Education and Research (IISER), Pune, Maharashtra, India, January 2014–May 2020.
- **Master of Philosophy in Chemistry (M.Phil)**, Department of Chemistry, Jamal Mohamed College (Autonomous), Tiruchirappalli, Tamilnadu, India, June 2011-April 2012.
- **Master's Degree in Chemistry (MSc)**, Department of Chemistry, National College (Autonomous), Tiruchirappalli, Tamilnadu, India, June 2009-April 2011.
- **Bachelor's Degree in Chemistry (BSc)**, Department of Chemistry, Rajah Serfoji Government College (Autonomous), Thanjavur, Tamilnadu, India, June 2005-April 2008.

### Research Experience

- **Ph.D.**, Indian Institute of Science Education and Research, Pune, India (Jan 2014-May 2020), **Supervisor:** Prof. Ramamoorthy Boomishankar; **Thesis Title:** Organo and Amino Phosphonium Cation Derived Ferro and Piezoelectric Materials and their Utility in Mechanical Energy Harvesting Applications.
- **M.Phil**, Jamal Mohamad College, Tiruchirappalli, Tamilnadu, India, (June 2011-April 2012), **Supervisor:** Dr. A. Zahir Hussain; **Project Title:** Phytochemistry and GC-MS Analysis of Indian Medicinal Plants.
- **MSc**, National College, Tiruchirappalli, Tamilnadu, India (June 2009-May 2011), **Supervisor:** Dr. Arun PrabuKumar; **Project Title:** Recovery of Cadmium from the Ni-Cd Battery Effluent Sludge.

### Publications

1. **Vijayakanth, T.;** Ram, F.; Praveenkumar, B.; Shanmuganathan, K.; Boomishankar, R. Piezoelectric Energy Harvesting from a Ferroelectric Hybrid Salt  $[\text{Ph}_3\text{MeP}]_4[\text{Ni}(\text{NCS})_6]$  Embedded in a Polymer Matrix. *Angew. Chem. Int. Ed.* **2020**, *132*, 10454–10459 [Journal Rankings: 203; Impact Factor: 12.959].
2. **Vijayakanth, T.;** Ram, F.; Praveenkumar, B.; Shanmuganathan, K.; Boomishankar, R. All-organic Composites of Ferro and Piezoelectric Phosphonium Salts for Mechanical Energy Harvesting Application. *Chem. Mater.* **2019**, *31*, 5964–5972 [Journal Rankings: 340; Impact Factor: 9.567].
3. **Vijayakanth, T.;** Pandey, R.; Kulkarni, P.; Praveenkumar, B.; Kabra, D.; Boomishankar, R. Hydrogen-bonded Organo-amino Phosphonium Halides: Dielectric, Piezoelectric, and Possible Ferroelectric Properties. *Dalton Trans.* **2019**, *48*, 7331-7336 [Journal Rankings: 1653; Impact Factor: 4.174].

4. **Vijayakanth, T.**; Srivastava, A. K.; Ram, F.; Kulkarni, P.; Shanmuganathan, K.; Praveenkumab, B.; Boomishankar, R. A Flexible Composite Mechanical Energy Harvester from a Ferroelectric Organoamino Phosphonium Salt. *Angew. Chem. Int. Ed.* **2018**, *57*, 9054-9058 [Journal Rankings: 203; Impact Factor: 12.959].
5. Dhara, D.; **Vijayakanth, T.**; Nayak, M. K.; Kalita, P.; Boomishankar, R.; Yildiz, C. B.; Chandrasekhar.; Jana, A. Contrasting Reactivity of (boryl)(aryl)lithium-amide With Electrophiles: *N*- vs. *p*-aryl-*C*-nucleophilic Substitution. *Dalton. Trans.*, **2018**, *47*, 14411-14415 [Journal Rankings: 1653; Impact Factor: 4.174].
6. Srivastava, A. K.; **Vijayakanth, T.**; Divya, P.; Praveenkumar, B.; Steiner, A.; Boomishankar, R. Altering Polarization Attributes in Ferroelectric Metallo-Cavitands by Varying Hydrated Alkali-Metal Guest Cations. *J. Mater. Chem. C* **2017**, *5*, 7352–7359 [Journal Rankings: 589; Impact Factor: 7.059].
7. Dhara, D.; **Vijayakanth, T.**; Barman, M. K.; Naik, K. P. K.; Chrysochos, N.; Yildiz, C. B.; Boomishankar, R.; Schulzke, C.; Chandrasekhar, V.; Jana, A. NHC-stabilized 1-hydrosilamine: Synthesis, Structure, and Reactivity. *Chem. Commun.* **2017**, *53*, 8592–8595 [Journal Rankings: 806; Impact Factor: 5.996].
8. Deshmukh, M. S.; **Vijayakanth, T.**; Boomishankar, R. Stereo-chemically Distinct Cyclotetrasiloxanes Containing 3-Pyridyl Moieties, and Their Functional Coordination Polymers. *Inorg. Chem.* **2016**, *55*, 3098–3104 [Journal Rankings: 1245; Impact Factor: 4.825].
9. Ram, F.; Gudadhe, A.; **Vijayakanth, T.**; Aherrao, S.; Borkar, V.; Boomishankar, R.; Shanmuganathan. Nanocellulose Reinforced Flexible Composite Nanogenerators with Enhanced Vibrational Energy Harvesting and Sensing Properties. *ACS Applied Polymer Materials.* **2020**, *2*, 2550–2562 [Journal Rankings: NA; Impact Factor: NA].
10. Nayak, M. K; Sarkar, P.; Elvers, B. J.; Krummenacher, I.; Narayanan, R. S.; Dolai, R.; Roy, B.; Malik, V.; **Vijayakanth, T.**; Rawat, H.; Boomishankar, R.; Pati, S.K.; Schulzke, C.; Braunschweig, H.; Jana, A. N,N'-Ethylene Bridged bis-NHC-CAAC Dimer: Exhibiting 4-Electron Oxidation Involving Multiple Rearrangement Steps and Conversion to N,N'-Ethenyl Bridged bis-NHC-CAAC Dimer. (*Manuscript Submitted*).

### Manuscripts in Preparation

- **Vijayakanth, T.**; Ram, F.; Praveenkumar, B.; Shanmuganathan, K.; Boomishankar, R. Hybrid Polymer Composites of Organic-Inorganic Pseudohalogenometallate for Piezoelectric Energy Harvesting Application. **2021**, *Manuscript under preparation*.
- Srivastava, A. K.; **Vijayakanth, T.**; Divya, P.; Praveenkumar, B.; Boomishankar, R. Tetraanilino Phosphonium Dihydrogen Phosphate: A Hydrogen-bonded Ferroelectric Organic Salt Exhibiting High Polarization at Room Temperature. **2021**, *Manuscript under preparation*.
- Srivastava, A. K.; **Vijayakanth, T.**; Divya, P.; Praveenkumar, B.; Boomishankar, R. Investigation of the Ultra-Low Dielectric Constant in a Hydrogen-bonded Tetraanilino Phosphonium Trimesate Salt. **2021**, *Manuscript under preparation*.

### Awards and Distinctions

- **Best Ph.D. Thesis Award** is given by the Indian Institute of Science Education and Research (IISER), Pune, India, 2020.
- **Research Excellence Award (REA) or Young Achiever Award (YAA)** given by the Institute of Scholars (InSc), India, 2020.
- **Infosys Foundation Travel award**, India, 2017.

- **Senior Research Fellow**, Council of Scientific and Industrial Research, India, Jan 2016.
- **UGC-Junior Research Fellowship (All India 62nd rank, 2014) and Graduate Aptitude Test in Engineering-2013 (GATE)** conducted by the Council of Scientific and Industrial Research and Indian Institute of Technology, New Delhi, India.
- **Bharathidasan University fellowship** for an outstanding performance in M.Sc course in 2011.

### Research Conferences and Workshops

- ❖ Participated and given an oral presentation in the title of **“Piezoelectric Energy Harvesting from a Ferroelectric Hybrid Salt  $[Ph_3MeP]_4[Ni(NCS)_6]$  Embedded in a Polymer Matrix”** International Conference on Advances in Material Science and Chemistry (ICAMSC) held at Amrita University, Kerala, during 10-12 August 2020.
- ❖ Participated and gave an oral presentation in the title of **“Polymer Composites of Ferroelectric Organoamino Phosphonium Salts for Mechanical Energy Harvesting Applications”** International Conference on Structural Inorganic Chemistry (ICSIS-II) held at IISER Pune during 18-19 March 2019.
- ❖ Participated and given an oral presentation in the title of **“Hydrogen-bonded Supramolecular Ferroelectric Materials Supported by Organoamino Phosphonium Cations”** 24<sup>th</sup> Congress and General Assembly of the International Union of Crystallography 2017 (IUCr-2017), International Convention Centre, Hyderabad, 21-28 August 2017.
- ❖ Participated in five-day **“Theory and applications - Gaussian workshop”** held at Chennai Hotel Novotel, on 23<sup>rd</sup> February 2016.

### Significant Skills

- ❑ **Instrument Handling:** Single-crystal X-ray and powder diffractometer, Infra-Red spectroscopy, aixACCT TF-2000E (*P-E* hysteresis loop analyzer), Piezo test analyzer ( $d_{33}$  meter), Corona-poling tester, Vortex mechanical mixer, and Buchi melting point analyzer.
- ❑ **Synthesis, Analyzing data and Software Skills:** Organic and organic-inorganic hybrid molecules synthesis, High-temperature crystallization process, Inert reactions under Schlenk conditions, Handling of JACOMAX glove box, Flash chromatography, Preparation of polymeric composite films. NMR, IR, MALDI-TOF analyzer, SCXRD and PXRD, Thermal analysis (TGA, DTA, and DSC), SEM, APEX-3, Mercury, Diamond, Discovery studio, Topos Pro, Adobe Photoshop, Crystal explorer, Chemdraw, Origin and MestReNova, X-ray 3-D tomography analysis.

### References

#### Dr. Ramamoorthy Boomi Shankar

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#### Dr. Kadiravan Shanmuganathan

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#### Dr. Balu Praveenkumar

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