

N.S.Venkata Narayanan

Assistant Professor

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Work Experience

- March 2014 to Till date, **Assistant Professor**, Central University of Karnataka, Kalaburagi.

Post-Doctoral Research Experience

- January 2012 to February 2014, **Research Associate** at Imperial College London, London, United Kingdom
- January 2010 to January 2012, **Research Associate** at National Research Council of Canada, Ottawa, ON, Canada

Academic Qualifications

- **PhD** at Department of Inorganic & Physical Chemistry (Research Supervisor: Prof.S.Sampath), Indian Institute of Science, Bangalore, India in December 2009
- **Master of Science (M.Sc.) in Chemistry** at The American College (Autonomous), Madurai affiliated to Madurai Kamaraj University with 74% marks and qualified in I class in 2003
- **Bachelor of Science (B.Sc.) in Chemistry** at St. Xavier's College (Autonomous), Palayamkottai affiliated to Manonmaniam Sundaranar University with 89.7% marks and qualified in I class with distinction in 2001

Additional Qualifications

- Qualified **Graduate Aptitude Test in Engineering (GATE)** with a percentile of **95.06** (All India Rank 138) during the academic year 2003
- Qualified **National Eligibility Test (NET)** for Lectureship conducted by University Grants Commission & Council of Scientific and Industrial Research (**UGC-CSIR**) during the year 2003-2004

Fellowships

- **Research Associate Fellowship** from Imperial College London in an EPSRC funded project from January 2012 to February 2014
- National Research Council of Canada **Post-Doctoral Research Fellowship** at Institute for Chemical Process and Environmental Technology in NRC, Ottawa, Ontario from January 2010 to January 2012
- **Senior Research Fellow (SRF)** at Indian Institute of Science, Bangalore from August 2005 to December 2009
- **Junior Research Fellow (JRF)** at Indian Institute of Science, Bangalore from August 2003 to August 2005
- **Sandwich PhD Research Scholarship** offered by French Embassy in India from October 2007 to January 2008

Awards and Prizes

- A. S. R. Memorial prize for excellence in Chemistry in the academic year 2002-2003 during Master of Science (M.Sc.)

- Overall Academic Rank holder and won certificates of merit for excellence in Chemistry during Bachelor of Science (B.Sc.)
- Sponsorship & Travel Grant awarded by ARCUS-INDIA program of University of Joseph Fourier at Grenoble during PhD to participate European Summer School on Nanoscience and Nanotechnology (ESONN 2007) at Grenoble, France.
- Travel Grant & full expenses provided by French Embassy in India for Sandwich PhD research Scholarship (3 months) at University of Joseph Fourier, Grenoble, France

Membership of Professional Society

- Affiliate member of Royal Society of Chemistry (RSC)

Research Interest

- Electrochemical Energy Storage Devices
- Room Temperature Molten Solvents/Ionic Liquids/Deep Eutectics/Supercritical fluids
- Modified Electrodes, Electro-catalysis, Nanostructures for Bio-sensors and Surface enhanced Raman scattering

Summer School

Participated in European Summer School on Nanoscience and Nanotechnology (ESONN 2007) at Grenoble, France from August 26 to September 15, 2007.

Research Projects Undertaken

- 1) Principal Investigator (PI) for **UGC-BSR Research start up grant** (No.F.30-30/2014(BSR)) for 6 lakhs rupees
- 2) Principal Investigator (PI) for **SERB, DST-EMR** funded project (File No: EMR/2016/000236) for 47.6 lakhs rupees (2016-2020)
- 3) Co-Principal Investigator (Co-PI) for **SERB, DST-ECR** funded project (PI: Dr.Hanumae Gowd, Central University of Karnataka) (File No: ECR/2016/000028) for 40 lakhs rupees (2016-2019)

Research Publications

- 1) Amide-based Room Temperature Molten Salt as Solvent cum Stabilizer for Metallic Nanochains. N.S.Venkata Narayanan and S.Sampath, **J. Clus. Sci.**, **2009**, *20*, 375.
- 2) Physicochemical, Electrochemical and Spectroscopic Characterization of Zinc-Based, Room Temperature Molten Electrolytes and Their Application in Rechargeable Batteries. N.S.Venkata Narayanan, B.V.Ashokraj and S.Sampath, **J. Electrochem. Soc.**, **2009**, *156(11)*, A863.
- 3) Magnesium Ion Conducting, Room Temperature Molten Electrolytes. N.S.Venkata Narayanan, B.V.Ashokraj and S.Sampath, **Electrochem. Commun.**, **2009**, *11(10)*, 2027.
- 4) Phthalocyanine Macrocycle as Stabiliser for Au and Ag Nanoparticles. K.S. Lokesh, Venkata Narayanan and Srinivasan Sampath, **Microchim. Acta.**, **2009**, *167(1-2)*, 97.

- 5) Ambient Temperature, Zinc ion - Conducting, Binary Molten Electrolyte Based on Acetamide and Zinc Perchlorate: Application in Rechargeable Zinc Batteries N.S.Venkata Narayanan, B.V.Ashokraj and S.Sampath, **J. Colloid Interface Sci.**, **2010**, *342*(2), 505.
- 6) Physicochemical, Spectroscopic and Electrochemical Characterization of Magnesium Ion - Conducting, Room Temperature, Ternary Molten Electrolytes N.S.Venkata Narayanan, B.V.Ashokraj and S.Sampath, **J. Power Sources.**, **2010**, *195*(13), 4356
- 7) Study of the electrochemical oxygen reduction on gold, boron-doped diamond and glassy carbon electrodes in acetamide – urea – ammonium nitrate eutectic melt, V.S. Dilimon, N.S.Venkata Narayanan and S. Sampath, **Electrochim. Acta.**, **2010**, *55*(20), 5930.
- 8) Plasmon-Tuned Silver Colloids for SERRS Analysis of Methemoglobin with Preserved Nativity, Govindasamy Kalaivani, Arumugam Sivanesan, Ayyadurai Kannan, N.S.Venkata Narayanan, Agnieszka Kaminska, and Ranganathan Sevel, **Langmuir**, **2012**, *28* (40), 14357–14363
- 9) Regenerative Silver Nanoparticles for SERRS Investigation of Metmyoglobin with Conserved Heme Pocket, Govindasamy Kalaivani, N.S.Venkata Narayanan, Arumugam Sivanesan, Ayyadurai Kannan, Agnieszka Kaminska and Ranganathan Sevel, **RSC.Adv.**, **2013**, *3*, 6839-6846.
- 10) Spontaneous Formation of Branched Nanochains From Room Temperature Molten Amides: Visible and Near – IR Active, SERS Substrates for Non-Fluorescent and Fluorescent Analytes, K. L. Nagashree, R. Lavanya, C. Kavitha, N.S.Venkata Narayanan and Srinivasan Sampath, **RSC.Adv.**, **2013**, *3*, 8356-8364.
- 11) Nickel phosphide: the effect of phosphorus content on hydrogen evolution activity and corrosion resistance in acidic medium, Anthony R. J. Kucernak and Venkata N. Naranammalpuram Sundaram, **J. Mater. Chem. A**, **2014**, *2*, 17435-17445
- 12) Facile synthesis of palladium phosphide electrocatalysts and their activity for the hydrogen oxidation, hydrogen evolutions, oxygen reduction and formic acid oxidation reactions A.R.J Kucernak, K.F. Fahy and V.N.Naranammalpuram Sundaram **Catalysis Today**, **2016**, *262*, 48-56
- 13) Heat flow visualization of a chemical compound isobutane (C₄H₁₀) past a vertical cylinder in the subcritical, near critical and supercritical regions. G. Janardhana Reddy, Hussain Basha, and N.S. Venkata Narayanan* **J. Mol. Liq.**, **2018**, *259*, 209-219.
- 14) A numerical investigation of transient natural convective heat transfer to isobutane in the supercritical region. G. Janardhana Reddy, Hussain Basha, and N.S. Venkata Narayanan **J. Mol. Liq.**, **2018**, *250*, 131 –149.
- 15) Transient Flow and Heat Transfer Characteristics of non-Newtonian Supercritical Third-Grade Fluid (CO₂) past a Vertical Cylinder G. Janardhana Reddy, Ashwini Hiremath, Hussain Basha and N.S. Venkata Narayanan* **Int. J. Chem. Reactor Eng.**, **2018**, 20170232, 1-23.
- 16) Transient Natural Convection Heat Transfer to CO₂ in the Supercritical Region. G. Janardhana Reddy, Hussain Basha, and N.S. Venkata Narayanan **J. Heat Transfer**, **2018**, *140*, 092502-1-092502-10

- 17) Finite difference analysis of unsteady natural convection properties of carbon dioxide in the supercritical region using the Redlich-Kwong equation of state G. Janardhana Reddy, Hussain Basha, and N.S. Venkata Narayanan **J. Phys. Chem. Solids.**, **2018**, *122*, 284–301.
- 18) Supercritical heat transfer characteristics of couple stress convection flow from a vertical cylinder using an equation of state approach. Hussain Basha, G. Janardhana Reddy, N.S. Venkata Narayanan and O.Anwar Beg **J. Mol. Liq.**, **2019**, *277*, 434-452.
- 19) A Numerical Study of Natural Convection Properties of Supercritical Water (H₂O) using Redlich-Kwong Equation of State. G. Janardhana Reddy, Hussain Basha, and N.S. Venkata Narayanan **Sadhana** **2019**, *44*, 37.
- 20) The effect of thermal expansion coefficient for unsteady non-Newtonian supercritical Casson fluid (C₄H₁₀) flow past a vertical cylinder. G. Janardhana Reddy, Ashwini Hiremath, Hussain Basha and N.S. Venkata Narayanan **Pramana – J.Phys.**, **2019**, In Press. DOI: 10.1007/s12043-019-1770-y
- 21) Heat transfer characteristics of nitrogen in supercritical region using Redlich-Kwong equation of state. Hussain Basha, G. Janardhana Reddy and N.S. Venkata Narayanan **Int. J. Chem. Reactor Eng.**, **2019**, In Press. DOI: 10.1515/ijcre-2018-0279
- 22) Hydrogen Fuel Exhaling Zn-Ferricyanide Redox Flow Battery. Marichelvam Thamarachelvan, Zahid Manzoor Bhat, Thimmappa Ravi Kumar, Devendrachari Mruthyunjayachari, Kottaichamy Alagar, Venkata Narayanan Naranammalpuram Sundaram* and Musthafa Ottakam Thotiyl **ACS Sustainable Chem. Eng.**, **2019**, *7*, 16241-16246.
- 23) Analysis of supercritical free convection in Newtonian and couple stress fluids through EOS approach. Hussain Basha, G. Janardhana Reddy, N.S. Venkata Narayanan and Mikhail A. Sheremet. **Int. J. Heat Mass Transf.**, **2020**, In Press. <https://doi.org/10.1016/j.ijheatmasstransfer.2020.119542>
- 24) Thermodynamic analysis of natural convection supercritical water flow past a stretching sheet using an equation of state approach. Hussain Basha, G. Janardhana Reddy and N.S. Venkata Narayanan* **Can. J. Phys.**, **2020**, In Press. <https://doi.org/10.1139/cjp-2019-0384>

Research Guidance

- Hussain Basha (2015-2019 as Co-Supervisor for PhD with Dr.G.Janardhana Reddy as Supervisor from Department of Mathematics, CUK) - *PhD Awarded as on 20/08/2019*
- M.Thamarachelvan (2018-till date, PhD Supervisor) - *In Progress*
- Guided each year on average 5 MSc final year students for project in the final semester from 2015-till date