

**Dr. M. Hima Bindu**  
*Degree Lecturer*  
*Kamareddy, India-503111*

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## Summary

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An enthusiastic, adaptive and fast-learning person with a broad and acute interest in the discovery of new polymer and oligomer synthetic methodologies. I particularly enjoy collaborating with scientists from different disciplines to develop new skills and solve new challenges.

## Education

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<b>Ph.D. in Polymer Chemistry</b> <i>CSIR-Indian Institute of Chemical Technology, Hyderabad, Telangana, India.</i>	<b>2013-2020</b>
<b>B.Ed. in Physical Science</b> <i>Osmania University, Hyderabad, Telangana, India.</i>	<b>2011-2012</b>
<b>M.Sc. in Organic Chemistry</b> <i>Osmania University, Hyderabad, Telangana, India.</i>	<b>2007-2009</b>
<b>Bachelor of Science (Chemistry &amp; Mathematics)</b> <i>Osmania University, Hyderabad, Telangana, India.</i>	<b>2004-2007</b>

## Accomplishments

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APSET Lectureship	<b>2012</b>
CSIR-UGC Research Fellowship	<b>2013-2018</b>

## Research Interest

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- Thermoreversible Hydrogels and Organogels
- Emulsion gels, Pheromones
- Vegetable oil-based thermal insulating PU materials (Foams)
- Drug delivery and Ion sensing
- Shape memory and self-healing polymers

## Technical Skills

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- Proficient in polymers/gels/Foams/composites characterization and use of analytical instrumentation including FT-IR, UV, DSC, DMTA, TGA, UTM, Malvern particle size analyzer, Rheometer, TLC, Thermal Conductivity, Moisture Content, and Purification techniques etc.
- Expertise in synthesis of Thermoreversible gels and Emulsion gels by adopting sustainable approaches
- Formulations of Foams obtained from Vegetable oil based polyols

## Doctoral Research Experience

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**Polymers and Functional Materials Department,  
CSIR-Indian Institute Chemical Technology, 2013-2020**

Dissertation title: "Supramolecular Thermoreversible Hydrogels and

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## Organogels Structure-Property Relationships and Applications”

Research advisor: Dr. Aruna Palanisamy

- Investigated various synthetic methodologies including aminolysis, ring opening, Trans amidation, and rearrangement chemistry for the conversion of synthetic polymers and naturally available vegetable oils into gels.
- Synthesized biscarbamate, amide and bisurea type of gels using Polyethylene glycol and various bio based compounds.
- Developed thermoreversible low molecular weight and oligomer organogels and hydrogelsthrough various strategies different reagents.
- Developed NIPU based hydrogels by adopting non isocyanate route using PEG for controlled release of drug molecules for various biomedical applications.
- Developed organogels by one pot synthesis using renewable resources i.e. castor oil for ion responsive behavior.
- Formulated emulsion gels using lecithin, soybean oil and water and utilized for sustained release of pheromones for integrated pest control.
- Tutored postgraduates in dissertation project works and also guided project assistants for industrial projects.
- Assisted two major industrial projects
  1. Sweetech-2013(Development of polyols through transesterification of Castor oil for foam applications)
  2. GAP- MOef funded project on Clean Technology-2014 to 17 (Development of polyols from renewable non-edible oils for polyurethane rigid foam applications)

## Academic Experience

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Telangana Tribal Welfare Residential Degree college(m) Kamareddy Hyderabad, India.

Role: **Degree lecturer in Chemistry** (October 2019 to current)

- Possess about 3 years (2010-2013) Teaching Experience in**Chemistry subject for Undergraduate** students (both education and Administration). Takshasheela Degree College, Vikarabad, Telangana.

## Publications

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### Research articles

1. Ultrasound-and temperature Induced gelation of Glucanosemicarbazide gelator in DMSO and Water mixtures. **Hima Bindu** and Aruna Palanisamy\*. *Gels*, 3,12, (2017). DOI: 10.3390/gels3020012
2. Polyethylene-Glycol-Based Thermoreversible Biscarbamate Hydrogels and Metallogels Synthesized through Non-Isocyanate Route. **Hima Bindu**and Aruna Palanisamy\*.*ChemistrySelect* 4, 37, 11052-11060 (2019). DOI: 10.1002/slct.201903108
3. Bio-based castor oil organogels and investigations on their anion-tuning properties. **HimaBindu**and ArunaPalanisamy\*.*Colloid and Polymer Science*, 297,11-12 (2019). DOI: org/10.1007/s00396-019-04575-6
4. Karanja oil polyol and rigid polyurethanebio foams for thermal insulation. **Hima Bindu**,

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Kamalakar, M. S. L. Karuna, and Aruna Palanisamy\*. *Journal of Renewable Materials*, 5, 2, 124-131 (2017). DOI:org/10.7569/JRM.2016.634137

5. Why hydrazides and their derivatives are so special in making ideal gels for functional applications. **Hima Bindu** and Sravan Baddi\*. (Review under preparation)
6. Investigations on Thermoreversible gelation on Self-Assembling Amphiphilic Organogelators with PEG core. **Hima Bindu** and Aruna Palanisamy\*. (Manuscript yet to publish).
7. Rigid polyurethane bio foams from various non-edible oils for thermal insulation applications. **Hima Bindu** and Aruna Palanisamy\*. (Review article under preparation)

## References

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1. **Dr. P. Aruna**, Principal Scientist  
Polymers & Functional Materials Department  
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I hereby declare that, all the information presented above is true to the best of my knowledge.

**Dr. M. Hima Bindu**