

**Nisha Rani Ray**

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**Summary:**

Stimuli responsive organic molecules have a wide application, specially focused on **API**, synthesis of smart co-crystal and studying their **stimuli-responsive properties** which act as actuators. I can confidently carry out the **organic synthesis** of molecules from **milligram to multigram scale**. I am looking for an opportunity that provides professional development, novel experiences and utilizes and enhances my scientific knowledge.

**Experience**

**NACL Industries Limited, Hyderabad**

**April 2022- till date**

**R&D Division**

Reaction set up and monitoring for **organic synthesis** from **Milligram to Multigram** scale of active ingredients for crop protection molecules.

**CSIR-IICT, Hyderabad**

**2021-2022**

**Medicinal Chemistry and synthesis** supervisor **Dr Lingaiah Nagarapu**

The synthesis and characterization of the **pharmaceuticals molecules** (benzoxazine derivatives) and assessment for **biological activity**.

**NIT Meghalaya, Shillong**

**2017-2019**

**Synthesis of API based smart molecules** supervisor **Dr Naba Kamal Nath**

**Synthesis of API** probenecid and its **Co-crystal** derivatives as **stimuli-responsive smart** materials was reported as a **publication**.

**NIT Meghalaya, Shillong**

**2016-2017**

**Organic LED synthesis for energy conversion** supervisor **Dr Gittish K. Dutta**

Organic LED synthesis by modulating solid state luminescence of an anthracene based of fluorephore by co-crystallization . Synthesis, purification and characterization of the fluorephore molecule. Co-crystallization by Liquid Assisted Grinding method

## Skills & Expertise

**Techniques:** Synthesis of Organic Molecules from **milligrams to multi-grams**, Purification of compounds using Column chromatography, experience at making co-crystals and crystallization process.

**Instruments:** Thermal Microscope, Differential Scanning Calorimeter, FT-IR, UV-visible and Fluorescence Spectrometer and Thin layer chromatography

**Analyses:** **Pharmaceutical molecules (API)**, Stimuli-responsive of crystals and co-crystals, smart crystals and HPLC data to monitor the status of organic synthesis.

## Publications:

1. Fast and Reversible Bidirectional Photomechanical Response Displayed by a Flexible Polycrystalline Aggregate of a Hydrazone. P. Gupta, S. Allu, P. J. Hazarika, N. R. Ray, A. Nangia and N. K. Nath, CrystEngComm, **2022**,  
<https://doi.org/10.1039/D2CE00829G>
2. Plastically Bendable Crystals of Probenecid and its Cocrystal with 4,4'-Bipyridine N. K. Nath, M. Hazarika, P. Gupta, **Nisha R. Ray**, Amit K. Paul, E. Nauha J. Mol. Struct., **2018**, 1160, 20-25.  
<https://doi.org/10.1016/j.molstruc.2018.01.044>

## Awards:

University **10th Rank Holder**-Bachelor of Science in Chemistry.

## Presentations/Conferences:

1. Poster "**Bendable crystals of probenecid and its co-crystal with 4,4'-bipyridine**"- Organix International Conference, Tezpur University, Assam, India.  
**2018**
2. "**A co-crystal Strategy to tune the luminescent properties of stilbene type organic solid-state materials**"- NIT Meghalaya India.  
**2017**
3. **National workshop on maintenance of Opto Analytical Instruments** St. Anthony's College, Shillong, India.  
**2013**
4. **Workshop on Basic Sciences, programme of the Star College Scheme**, St. Anthony's College, Shillong, India  
**2012**

**Education:**

**Master of Science in Chemistry** with a score of 7.4/10 from **NIT Meghalaya** **2015-2017**

**Bachelor of Science in Chemistry** with 70.25% from **North-Eastern Hill University**, India  
**2012-2015**

**References:**

**Dr. Lingaiah Nagarapu**, Senior Principal Scientist, Council of Scientific And Industrial Research–Indian Institute Of Chemical Technology (CSIR-IICT), India.

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**Dr. Naba Kamal Nath**, Assistant Professor, Department of chemistry, NIT Meghalaya

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**Dr. Gittish k. Dutta**, Assistant Professor, Department of chemistry, NIT Meghalaya, India.

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