

FACULTY PROFILE



Name of the Faculty - Dr Nidhi Gour
Designation – Associate Professor
SCHOOL School of Sciences

Research Area: Chemical Biology, Nanoscience, Nanomaterials, Sensors, Peptide based assemblies.

1) Education Qualification

Particulars	Completion Year	Institute / University	Topic /Majors/ Specialisation
Bachelor of Science (BSc)	2002	Holkar Science College, DAVV, indore	Pharmaceutical Chemistry
Masters of Science (MSc)	2004	Devi Ahilya Vishwa Vidyalaya, Indore	Life Sciences
Doctor of Philosophy (PhD)	2010	Indian Institute of Technology (IIT), Kanpur	Organic Chemistry

2) Work Experience-

Year	Designation	Institute
Aug 2021- Present	Associate Professor	Indrashil University
Jul 2019- Present	Assistant Professor	Indrashil University
Aug, 2016- Jul, 2019	Assistant Professor	Indian Institute of Advanced Research, Gandhinagar, Gujarat, India
May, 2015 – Apr, 2017	Visiting Faculty	Indian Institute of Advanced Research, Gandhinagar and Central University of Gujarat
July, 2013-July, 2014	CSGI Postdoctoral Fellow	University of Florence, Italy

Jul, 2011 – Jun 2013	Post Doctoral Research Fellow	, University of Geneva, Switzerland
Nov, 2010- Jun 2011	Research Fellow	Albert Einstein College of Medicine, New York, USA
Apr 2010-Oct-2010	Visiting Fellow	Tata Institute of Fundamental Research, Mumbai, India

3) Details of paper published in Journals (numbers):

International Journals – **21** (Including 17 research articles, 4 book chapters;

Total citations: 330, h-index 12)

Google scholar link:

<https://scholar.google.com/citations?user=XuoJoLcAAAAJ&hl=en>

4) Details of paper published in Conferences (numbers):

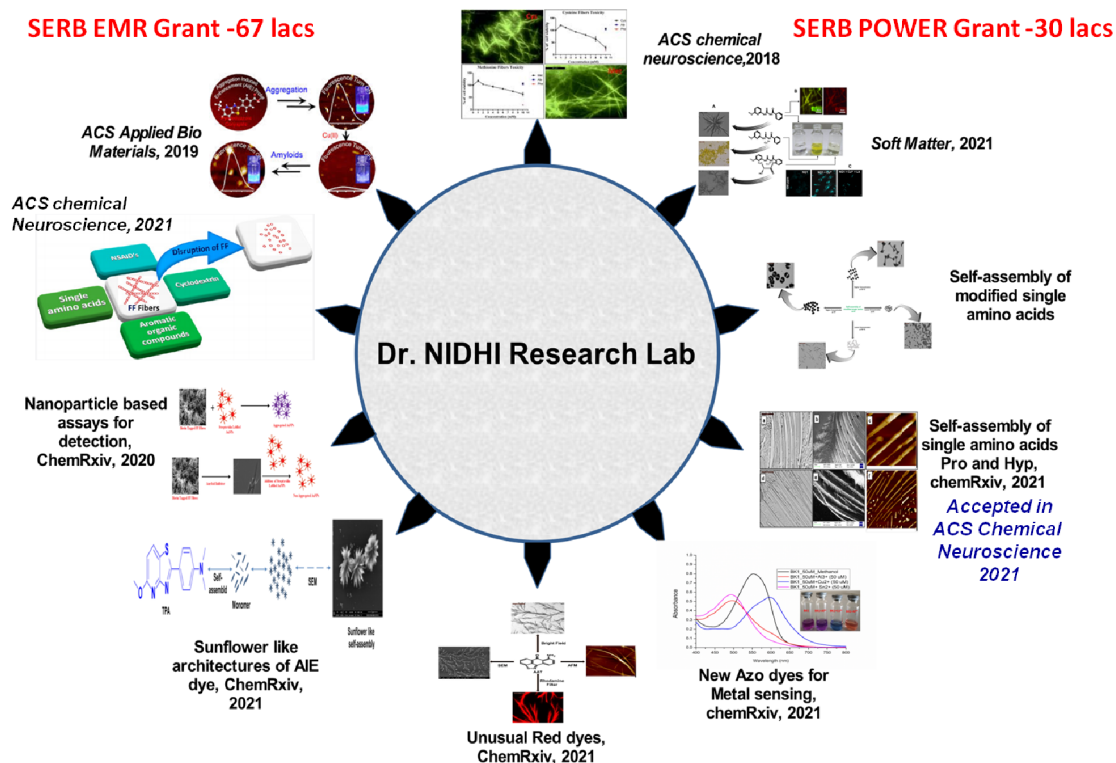
National Conferences : 6

International Conferences : 17

5) No. of Awards/ Grants Received and its Details–8

1. Awarded SERB POWER Grant in 2021 and received Grant Amount of 28,90,000 INR for 3 years. The Grant is given to promising woman Scientists of India to encourage their research.
2. Awarded Newton Researcher links Workshop Grant 2017 as an initiative from Newton Fund Scheme for encouraging collaboration between Early career researchers from India and UK
3. Received extramural research grant in 2016 from DST SERB as a Principal Investigator Project title: ‘A novel nanoparticle-based bioassay for sensitive detection of cancer-specific proteases.’ Grant amount ~ 67 lacs.
4. PhD thesis was selected for 2nd Prize of “2010 Eli Lilly and Company Asia Outstanding Thesis Awards”.
5. Received CSGI Postdoctoral Research Grant for conducting research in lipid oligonucleotide conjugates in University of Florence, Italy
6. Received Visiting Fellowships from Albert Einstein College of Medicine, New York, USA and Tata Institute of Fundamental Research, Mumbai India.
7. Received Postdoctoral Research Fellowship from Swiss National Science Foundation for conducting research on polymer and peptide self-assemblies.
8. Secured 99.55% and All India Rank 22nd in Graduate Aptitude Test in Engineering (GATE).

Research in Dr. Nidhi Lab



Research Grants

1. Received extramural research grant from SERB in March 2017
Grant Number: SERB-EMR/2016/003186
Project title: “A novel nanoparticle based bioassay for sensitive detection of cancer specific proteases.”
Grant Amount: ~67 lakhs; **Role:** Principal Investigator
Project Status: Completed
2. Received POWER grant from SERB in March 2017
Grant Number: SPG/2021/000521
Project title: “Amyloid-like structures formed by single amino acids and its implication in metabolite disorders”
Grant Amount: ~30 lakhs; **Role:** Principal Investigator
Project Status: Ongoing

Current Research Group at Indrashil University

Ms. Bharti Koshti (PhD student, SHODH Fellow)
Mr. Vivekshinh Kshtriya (PhD student, ICMR SRF)
Mt. Soumick Naskar (M.Sc. IIT Madras, Project student SERB)

M.Sc/M.Tech Thesis Guided

Pruthvi Upadhyay (M.Tech, Mumbai University)
Jainisha Patel (M.Sc. Project student, IAR)
Yash Barot (M.Sc. Project student, IAR)

Harshil Patel (M.Sc. Project student, IAR)
Krupali Hun (M.Sc. Project student, VNSU, Surat)
Rasila Chaudhary (M.Sc. Project student, Indrashil University)
Mayuri Sojitra (M.Sc. Project student, VNSU, Surat)
Yogesh Bhoya (M.sc Project student, Indrashil University)
Rasila Parmar (M.sc Project student, Indrashil University)
Rutik Majethiya (B.Tech Project student, IAR) Bhamini Vasava (M.sc Project student, Indrashil University) Alita Gamit (M.sc Project student, Indrashil University) Ankesh Patel (M.sc Project student, Indrashil University)
Ankita Gamit (M.sc Project student, Indrashil University)

International/National Collaborations

1. Prof. Ehud Gazit (Tel. Aviv University, Israel)
 2. Dr. Manoj Pandey (PDP, Gujarat)
 3. Dr. K. B. Joshi (Sagar University, M. P.)
 4. Dr. Dhiraj Bhatia (IIT Gandhinagar)
 5. Dr. Dhiraj K. Singh (IITRAM)
 6. Dr. Danil Bukhvalov (Nanjing Forestry University, China)
-

Research Interest and Future Plan

- **Single amino acid self-assembly and its association with IEMs and amyloid diseases:** There are many diseases which are caused by the accumulation of amino acids due to inborn errors of metabolism (IEM). Our aim is to understand the molecular mechanism of these IEM by assessing self-association of amino acids
- **Controlled self-assembly of modified single amino acids:** There is an ever increasing demand to find new scaffold for the design of novel micro/nanoarchitectures which can be of potential interest for diverse applications in material science. In this direction, we are interested in assessing the self-assembly of modified single amino acids under controlled condition. The project aims to find a very simple and facile route for synthesis of novel scaffold for self-assembly.
- **Assessing aggregation properties of heterocyclic compounds for their application as dye and in sensing:** The main objective of this project is to synthesize heterocyclic compounds which can potentially be used as dyes and sensors. Our studies also suggest there is direct correlation between aggregation properties and photophysical characteristic of compounds. Some dyes reveal enhanced fluorescence on aggregation as in aggregation induced emission dyes which some other reveal better fluorescence on disaggregation.
- **Nanoparticle based assay:** The main goal of these projects will be to design safe and efficient nanoparticle-based products for imaging and diagnosis of diseases like cancer. We have already efficiently designed gold nanoparticle-based assay for facile detection of amyloid inhibitors. We want to develop more novel assay for detection of analyte in minute amounts in future.

List of Publications as Faculty (Original research articles, Preprint, Review, Book Chapter

(* Corresponding author)

Original Research Articles

1. **Gour, N.***, Kanth P, C., Koshti, B., Kshtriya, V., Shah, D., Patel, S. & Pandey, M. K. (2018). Amyloid-like Structures Formed by Single Amino Acid Self-Assemblies of Cysteine and Methionine. *ACS chemical neuroscience*. (IF: 4.59)
2. **Gour, N. ***, Kshtriya, V., Gupta, S., Koshti, B., Singh, R., Patel, D., & Joshi, K. B.* (2019). Synthesis and Aggregation Studies of a Pyridothiazole-Based AIEE Probe and Its Application in Sensing Amyloid Fibrillation. *ACS Applied Bio Materials*, 2(10), 4442-4455.
3. Koshti B, Kshtriya V, Nardin C, Gour N. (2021) Chemical Perspective of the Mechanism of Action of Anti-amyloidogenic Compounds Using a Minimalistic Peptide as a Reductionist Model. *ACS Chemical Neuroscience*. Jul 15. (IF: 4.59)
4. Kshtriya, V., Koshti, B., Pandey, D. K., Kharbanda, S., Singh, D. K.*, Bhatia, D. *, & **Gour, N.*** (2021). Sequential and cellular detection of copper and lactic acid by disaggregation and reaggregation of the fluorescent panchromatic fibres of an acylthiourea based sensor. *Soft Matter*, 17(16), 4304-4316. ((IF: 3.69)
5. Koshti, B., Kshtriya, V., Walia, S., Bhatia, D., Singh, R. & **Gour, N.*** (2021). Unusual Aggregates Formed by the Self-Assembly of Proline and Hydroxyproline. (Just accepted in *ACS chemical neuroscience*).

Review

1. **Gour, N.** and Gazit, E.* Metabolite Assemblies: A Surprising Extension to the Amyloid Hypothesis. Accepted in *Current Opinion in Chemical Biology* (IF 9.869)

Preprints in ChemRxiv (under review in Journals)

1. Kshtriya, V., Koshti, B., & **Gour, N.*** (2021). Controlled morphological changes in self-assembled structures formed by Fmoc variants of Threonine and Serine. *Preprint* (under review in *New J. Chemistry*)
2. Kshtriya, V., Koshti, B., Haque, A., Gangrade, A., Singh, R., Joshi, K. B., ... & **Gour, N.*** (2021). Self-assembly and photophysical studies of an unusual red colored dye which show green fluorescence in cell imaging. *Preprint* (under review in *Soft Matter*)
3. Kshtriya, V., Koshti, B., Haque, A., Gangrade, A., Singh, R., Joshi, K. B. Bandyopadhyay, S. Bhatia, D. & **Gour, N.*** (2021). Sunflower-like fluorescent self-assembled morphologies formed by pyridothiazole based aggregation induced emission (AIE) dye and its cell imaging applications. *Preprint* (under review in *ACS Applied Materials and interfaces*)
4. **Gour, N.***, Kshtriya, V., Koshti, B., Gangrade, A., Haque, A., Ramesh, S., & Bhatia, D. (2021). Synthesis and Characterization of the Fluorescent Self-Assembled Structures Formed by Benzothiazolone Conjugates and Applications in Cellular Imaging. *Preprint* (under review in *New J. Chemistry*)
5. Kshtriya, V., Koshti, B. & **Gour, N.*** (2021). A New Azo Dye Based Sensor for Selective and Sensitive Detection of Cu (II), Sn (II), and Al (III) Ions. *Preprint* (under review in *Dyes and Pigments*)
6. Koshti, B., Kshtriya, V. & **Gour, N.*** (2021). A new azo dye for the selective detection of glycine. *Preprint*
7. Koshti, B. Chandrakanth P. Pandey MK, Nardin C. **Gour, N.*** (2021) "Simple nanoparticle based assay for facile detection of amyloid inhibitors" (under review)
8. Kshtriya, V., Koshti, B., Narode, H., Naskar, S. & **Gour, N.*** (2021) "Controlled self-assembly of modified aromatic amino acids" *Preprint*

Book Chapters

1. Kanth, P. C.; Verma,* S. K.; **Gour N.***(2020) "Functionalized nanomaterials for biomedical, pharmaceutical, agriculture and agri-food industry" *Elsevier* in "Handbook of Functionalized Nanomaterials for Industrial Applications" Ed. C. M. Hussain.
-

2. **Gour, N.*** P. Upadhayaya, J. Patel (2019) “Nanomaterials as therapeutic and diagnostic tool for controlling plant diseases” *Elsevier* for a contributed book on “Analysis, fate, and toxicity of engineered nanomaterials in plants “in Elsevier Book Series Ed. D. Barcelo
3. Kshtriya, V., B. Koshti, **Gour N.*(2021)** “Green synthesized Nanomaterials: Classification, Synthesis, Characterization, and Applications” *Elsevier*, USA, Ed. SK Verma and AK Das

List of Publications from PhD and Postdoc

1. Kedracki, D., Filippov, S. K., **Gour, N.**, Schlaad, H., & Nardin, C. (2015). Formation of DNA Copolymer Fibrils Through an Amyloid-Like Nucleation Polymerization Mechanism. *Macromolecular rapid communications*, 36(8), 768-773. (impact factor 4.41)
2. Abraham, J. N., Gour, N., Bolisetty, S., Mezzenga, R., & Nardin, C. (2015). Controlled aggregation of peptide–DNA hybrids into amyloid-like fibrils. *European Polymer Journal*, 65, 268-275. (impact factor 3.5)
3. **Gour, N.**, Abraham, J. N., Chami, M., Castillo, A., Verma, S., & Vebert-Nardin, C. (2014). Label-free, optical sensing of the supramolecular assembly into fibrils of a ditryptophan–DNA hybrid. *Chemical Communications*, 50(52), 6863-6865. (impact factor 6.718)
4. **Gour, N.**, Ngo, K. X., & Vebert-Nardin, C. (2014). Anti-I nfectious Surfaces Achieved by Polymer Modification. *Macromolecular Materials and Engineering*, 299(6), 648-668. (impact factor 2.339)
5. Barman, A. K., **Gour, N.**, & Verma, S. (2013). Morphological transition triggered by mannose conjugation to a cyclic hexapeptide. *ARKIVOC*, 2, 82-99. (impact factor 1.04)
6. Gour, N., Kedracki, D., Safir, I., Ngo, K. X., & Vebert-Nardin, C. (2012). Self-assembling DNA–peptide hybrids: morphological consequences of oligonucleotide grafting to a pathogenic amyloid fibrils forming dipeptide. *Chemical Communications*, 48(44), 5440-5442. (Selected in Virtual Journal of Nanoscale Science and Technology).(impact factor 6.718)
7. **Gour, N.**, Barman, A. K., & Verma, S. (2012). Controlling morphology of peptide based soft structures by covalent modifications. *Journal of Peptide Science*, 18(6), 405-412. *J. Pept. Sci.* **2012**, 18, 405-412. (impact factor 2.071)
8. **Gour, N.**, Mondal, S., & Verma, S. (2011). Synthesis and self assembly of a neoglycopeptide: morphological studies and ultrasoundmediated DNA encapsulation. *Journal of Peptide Science*, 17(2), 148-153. (impact factor 2.071)
9. **Gour, N.**, & Verma, S. (2009). Bending of peptide nanotubes by focused electron and ion beams. *Soft Matter*, 5(9), 1789-1791. (Selected in Virtual Journal of Nanoscale Science and Technology, May 4, 2009, Vol. 19, issue 18). (impact factor 4.151)
10. **Gour, N.**, Purohit, C. S., Verma, S., Puri, R., & Ganesh, S. (2009). Mannosylated self-assembled structures for molecular confinement and gene delivery applications. *Biochemical and biophysical research communications*, 378(3), 503-506. (5-year impact factor 2.5)
11. **Gour, N.**, & Verma, S. (2008). Synthesis and AFM studies of lectin–carbohydrate self-assemblies. *Tetrahedron*, 64(30-31), 7331-7337. (Highlighted in Vertical News) (5-year impact factor 2.899)

Book Chapters

12. Kedracki, D.; Safir, I.; **Gour, N.**; Ngo, K.; Vebert-Nardin, C. “DNA-Polymer Conjugates: From Synthesis, Through Complex Formation and Self-assembly to

Applications" in *Advances in Polymer Science* 2013, 253, 115-150 in H. Schlaad
"Biosynthetic polymer conjugates" (5-year impact factor 6.192)

13. Vijaya Krishna, K.; **Gour, N.**, Verma, S."Peptide-based soft spherical structures" in *John Wiley & Sons*, 2013, in C. Alemán, A. Bianco, M. Venazi "Peptide. Materials: From Nanostructures to Applications" DOI: 10.1002/9781118592403.ch7
-

Reviewer for Journal/Grant:

Served as a reviewer for Journals from *Springer, Elsevier, RSC* publishers.

Served as reviewer of *Israel Science foundation* Grant and *SERB* grant

Student guidance/mentorship:

- Currently guiding two PhD students at Indrashil Unviersity and also served as guide for 16 M.Sc. /M. Tech/B.Sc project thesis so far
- Worked as a student guide for 6 M.Sc.. project students at IIT Kanpur
- Trained 2 PhD students and worked as student supervisor for 2 post graduate and one undergraduate project as a Postdoc at University of Geneva

Teaching experience

- Course Instructor for ENVIRONMENTAL CHEMISTRY and GREEN CHEMISTRY course at Indrashil Unvieshil University for M.Sc. IV Sem Chemistry.
- Course Instructor for BIOCHEMISTRY course at Indrashil Unvieshil University for M.Sc. II Sem Biosciences.
- Course Instructor for INDUSTRIAL CHEMISTRY course at Indrashil University for B.Sc. IV Sem Chemistry.
- Course Instructor for ENVIRONMENTAL SCIENCE course at Indrashil University for B.Sc. I Sem Chemistry as well as Biosciences.
- Course Instructor for PHYSICAL and ANALYTICAL CHEMISTRY course at Indrashil University for B.tech. I Sem Chemical Engineering.
- Course Instructor for INORGANIC and ORGANIC Chemistry course at Indrashil University for B.tech. III Sem Chemical Engineering
- Course Instructor for various **Lab courses** ANALYTICAL TOOLS AND TECHNIQUES, PHYSICAL CHEMISTRY, METABOLISM, ENZYMOLOGY,

BIOCHEMISTRY courses at various level for B.Sc. and M.Sc. students in both Chemistry and Biosciences at IU.

- Instructor for ANALYTICAL METHODS course for post graduate and undergraduate students at IAR
- Instructor for LABORATORY RESEARCH PRACTICE course for post graduate and undergraduate students at IAR
- Instructor for BIOCHEMISTRY course for post graduate student at IAR
- Instructor for BIOMOLECULES course for under graduate student at IAR
- Instructor for NANO-CHEMISTRY course for post graduate and undergraduate students at IAR
- Instructor for METABOLISM course for under graduate student at IAR
- Instructor for MEDICINAL NANOTECHNOLOGY course for PhD students at IAR
- Lab tutor INTRODUCTORY CHEMISTRY LAB (CHM 101) at IITK
- Theory tutor BASIC ORGANIC CHEMISTRY (CHM 201) and GENERAL CHEMISTRY at IIT Kanpur
- Lab tutor Analytical chemistry in University of Geneva. Trained undergraduate students in HPLC and Fluorescence techniques

Administrative experience

- Member of Academic Council, IQAC cell, anti-ragging squad, and admission counselor at Indrashil University
- Admission coordinator in IAR for 2017 batch: Job included guiding and counselling students and serve as group leader for admissions at IAR.
- Co-Coordinator of Chemistry/ Chemical Engineering at IAR (Jan 2017-Jun 2018)
- Coordinator for chemical engineering courses in 2017 (Jan-July 2017)

Organizer for event/ Seminar

- Served as Convener for **DST INSPIRE Science Camp** organized at Indrashil University (3rd to 7th Jan 2020).
- Served as Coordinator for **GujCOST weekly Webinar series** organized at Indrashil University (4th Dec to 31st Dec 2020).

- Organising Secretary **INTERNATIONAL e-CONFERENCE -2021** Joint Conference by Nirma and Indrashil University “Covid-19: Challenges and Opportunities in Pharmaceutical Research”
- Serving as **Webinar Convener and Coordinator** for Indrashil University. Indrashil University holds two Webinar by eminent Scientist monthly.

Selected Invited Seminars

- Invited speaker in ISNSCON 2018 6th World congress on Nano medical Sciences held at Vigyan Bhavan Delhi on 7th-10th January 2019
- Invited speaker in National conference at IIT Gandhinagar on 4th and 5th Jan 2018.
- Invited speaker in Newton Researcher links Workshop held at IIT Kanpur in 5th-8th November 2017
- Invited speaker in National Conference on Nanotechnology in Agriculture, Energy and Medicine held on 11th and 12th March 2016 at Central University of Gujarat.
- Invited seminar and visit at CSGI Florence in Prof. Piero Baglioni’s group on 18.03.2013 entitled “Self-Assembling Biomolecules”
- Invited Contribution at Swiss Soft Days 9th workshop held on 29-10-2012 Nestle Lausanne, Switzerland entitled “Anti-amyloidogenic effects of oligonucleotides”
- Invited talk and visit at Imperial College London (U.K) in Prof. Molly M. Stevens’ group on 18.07.2012 entitled “Self-Assembling Biomaterials”

Selected Seminars/Conference/Presentations

- Oral contribution at Swiss Soft Days 7th workshop held on 13-02-2012 EPFL Lausanne, Switzerland entitled “Self-Assembling Peptide-Nucleotide Hybrids.”
- Presented a poster entitled “Novel Oligonucleotide-Biopolymer Hybrid: Self-Assembly into Hollow Spherical Structures” at USGEB 2012, held on Feb 06-07, University of Lausanne.
- Presented a poster entitled “Self-Assembling Peptide-Nucleotide Hybrids” at Poly Coll 2012 held on 20th April 2012, University of Fribourg.
- Oral contribution at COST Symposium held on April 25-27, 2012 at Linköping, Sweden entitled “Self-Assembling Bioinspired-Nucleotide Hybrids.”
- Worked as Volunteer in Indo-German symposium “Frontiers of Chemistry, An Indo-German Symposium”(October 26-28, 2007) organized in IIT-Kanpur

- Talk at 4th National Organic Symposium Trust (NOST), India, for Research Scholars Dec. 6-9, 2008, Madurai Kamraj University, Madurai, India entitled: “Mannosylated soft spherical structures for molecular confinement and gene delivery”.
 - Invited Seminar at Department of Chemical Sciences, TIFR, Mumbai (India) on Jan. 18, 2010 entitled: “Peptide based soft self-assembled structures: synthesis, characterization, application and fabrication”
-