

Name : Dr. Koushik Chandra

Designation : Assistant Professor
Department of Chemistry
Midnapore College (Autonomous)
Midnapore- 721101, W.B, India



Education Qualification : M.Sc, Vidyasagar University, India
Ph.D, IIT Kharagpur, India on 'Design and Synthesis of Cyclic Peptides and Enediynyl Amides: Inhibition Studies against Mycobacterium tuberculosis Protein Tyrosine Phosphatase A'
Post Doc, The Hebrew University of Jerusalem, Israel, on 'New developments in solid phase peptide synthesis and protein interaction'
NET (Shortlisted for SPM), GATE

Contact Number : +91-8777482336
Email Id : koushikchandra.ind@gmail.com

➤ Area of Teaching:

- i) Organic chemistry and reaction mechanism
- ii) Spectroscopic application in organic chemistry
- iii) Bio-organic and medicinal chemistry
- iv) Organic chemistry of drug design and drug action
- v) Skill enhancement based chemistry

➤ Courses taught at UG and PG level:

UG level:

- i) Electronic properties in organic chemistry
- ii) Stereochemistry
- iii) UV, IR, NMR spectroscopy
- iv) Substitution and addition reaction
- v) Reaction with carbonyl compounds
- vi) Rearrangements in organic chemistry
- vii) Reaction in aromatic system
- viii) Sugar, aminoacid and peptide chemistry
- ix) Aromatic reaction

PG level:

- i) Pericyclic Chemistry
- ii) Photochemistry
- iii) NMR spectroscopy
- iv) Peptide, protein and Enzyme chemistry
- v) Stereochemistry
- vi) Reagent chemistry
- vii) Pd, Si, B, S- Chemistry
- viii) Mass spectrometry

➤ Research interests :

- Developments of fluorescent chemosensor for heavy metals and biomolecules sensing: Design and synthesis of pyrene, dansyl, coumarin, Schiff base etc. based C_n symmetric small molecule fluorescent chemosensors for selective and ratiometric detection for heavy metals and interactions with biomolecules.
- Development of Bioherbicides from allelopathic interaction: Spectroscopic study of allelopathic interactions and synthetic modification of allelochemicals towards the development of bioherbicides.
- Development of peptide based drugs for protein-protein interaction: Biophysical studies of both human and plant protein-protein interactions at the molecular level using target specific synthesized and modified peptides.

➤ List of publications:

- i) Naoum, J. N.; [Chandra, K.](#); Shemesh, D.; Gerber, R. B.; Gilon, C.; Hurevich, M. DMAP-assisted sulfonylation as an efficient step for the methylation of primary amine motifs on solid support. *Beilstein J. Org. Chem.*, 2017, 13, 806–816. [Impact factor : 2.762]
- ii) [Chandra, K.](#), Das, P.; Metanis, N.; Friedler, A; Reches, M. Peptide fibrils as monomer storage of the covalent HIV-1 integrase inhibitor. *J. Pept. Sci.* 2017, 23, 117-122 [Impact factor : 1.95]
- iii) [Chandra, K.](#), Das, P.; Mamidi, S.; Hurevich, M.; Iosub-Amir, A.; Metanis, N.; Reches, M.; Friedler, A. Covalent Inhibition of HIV-1 Integrase by N-Succinimidyl Peptides. *ChemMedChem*, 2016, 11, 1987–1994 (Cover page) [Impact factor : 2.98]
- iv) [Chandra, K.](#); Maes, M.; Friedler, A. Interactions of HIV-1 Proteins as Targets for Developing Anti-HIV-1 Peptides. *Future Med. Chem.*, 2015, 7, 1055–1077 [Impact factor : 3.345]

- v) [Chandra, K.](#), Naoum, J. N.; Roy, T. K.; Gilon, C.; Gerber, R. B.; Friedler, A. Mechanistic Studies of Malonic Acid-Mediated *In Situ* Acylation. *Biopolymers, Peptide Science*, 2015, 104, 495–505 [Impact factor : 2.879]
- vi) [Chandra, K.](#); Roy, T. K.; Shalev, D. E; Loyter, A.; Gilon, C.; Gerber, R. B.; Friedler, A. A Tandem *In Situ* Peptide Cyclization through Trifluoroacetic Acid Cleavage. *Angew. Chem. Int. Ed*, 2014, 53, 9450-9455 (Frontispiece). [Impact factor : 11.994]
- vii) [Chandra, K.](#), Roy, T. K.; Naoum, J. N.; Gilon, C.; Gerber, R. B.; Friedler, A. A Highly Efficient *In Situ* N-Acetylation Approach for Solid Phase Synthesis. *Org. Biomol. Chem.*, 2014, 12, 1879-1884 (Cover page). [Impact factor : 3.564]
- viii) Tripathy, T.; Kolya, H.; [Chandra, K.*](#) Lewis Acid Mediated One Pot Solvent Free Synthesis of Phenolics Based Chimeric Azo Dyes Used as Suitable Acid-Base Indicator. *Adv. Sci. Focus*. 2013, 1, 306-313. [Impact factor : ISSN: 2330-0760]
- ix) [Chandra, K.](#); Dutta, D.; Mitra, A.; Das, A. K.; Basak, A. Design, Synthesis and Inhibition Activity of Novel Cyclic Eneidyne Amino Acid Conjugates against MPtpA. *Bioorg. Med. Chem*. 2011, 19, 3274-3279. [Impact factor : 2.930]
- x) [Chandra, K.](#); Dutta, D.; Das, A. K.; Basak, A. Design, Synthesis and Inhibition Activity of Novel Cyclic Peptides against Protein Tyrosine Phosphatase A from *Mycobacterium tuberculosis*, *Bioorg. Med. Chem*. 2010, 18, 8365–8373. [Impact factor : 2.930]
- xi) Pal, R.; Ghosh, S. C.; [Chandra, K.](#); Basak, A. Synthesis of β -Lactams by Kinugasa Reaction. *Synlett*. 2007, 15, 2321-2330. [Impact factor : 2.323]
- xii) Basak, A.; [Chandra, K.](#); Pal, R.; Ghosh, S. C. Kinugasa Reaction under Click Chemistry Conditions. *Synlett*. 2007, 10, 1585-1588. [Impact factor : 2.323]

➤ **List of Books/chapters in book published /edited :**

- i) [Editor](#) of book on ‘Environmental Awareness: An Introspection’; 09/2016, from Midnapore College (Autonomous), Midnapore in association with Arati Mitra for Avenel press, Burdwan. [ISBN: 978-93-80736-26-6].
- ii) [Chandra, K.](#); The Never-Ending Story of β -Lactams: Use as Molecular Scaffolds and Building Blocks. *Beta-Lactams*; pp373-419; 05/2017, from Springer International Publishing AG 2017. (DOI 10.1007/978-3-319-55621-5_120).
- iii) [Chandra, K.](#); Emergence of persistent organic pollutant (POPs) and their effect on human health. *Environmental Awareness: An Introspection*; 09/2016, from Midnapore College (Autonomous), Midnapore in association with Arati Mitra for Avenel press, Burdwan. [ISBN: 978-93-80736-26-6].

➤ **Selected seminars, conference, symposia organized/ presented :**

- i) **Oral presentation** in national symposium on ‘Chemistry and Environment’ (21st and 23rd October, 2016) organized by R.N.L.Khan Womens’s College, Midnapore and Association of Chemistry Teachers (ACT), TIFR, Mumbai, India. The title of the talk is ‘A Unified Approach of Tandem *in situ* Peptide Modification and Protein Modulation’.
- ii) **Invited** colloquium lecture in CSIR-North East Institute of Science & Technology, Jorhat on 30th March, 2016 on New methods for *in situ* peptide modification and protein modulation.
- iii) **Organized** an IQAC One Day Seminar on ‘Environmental Awareness’ (30th September, 2015) in Midnapore College (Autonomous), Vidyasagar University, India.
- iv) **Oral presentation** in national symposium on ‘Chemistry for Better Tomorrow – Current Trends and Opportunity’ (CBT-2014)’ (2nd and 3rd December, 2014) organized by Sidho-Kanho-Birsha University, Purulia, West Bengal, India. The title of the talk is ‘New Methods for Tandem *in situ* Peptide Modification in SPPS.’
- v) **Organized** an International Symposium on ‘Recent Trends on Research in Chemistry’ (2012) in Midnapore College, Vidyasagar University, India.
- vi) **Invited for oral presentation** in 1st Med Chem Congress symposium (25th-26th Feb, 2011) in Medicinal chemistry organized by the Indian Institute of Chemical Technology (IICT) and National Institute of Pharmaceutical Education and Research (NIPER), Hyderabad, India.

➤ **Details of Ph.D / PostDoc Students guided / Ongoing :**

- i) **Chandan Sahu** (SERB-NPDF running): He is working on developments of tailor-made fluorescence chemosensor to study dephosphorylation by glycosylated alkaline phosphatase with aldimine inhibitors.
- ii) **Santu Bhunia** (Ph.D ongoing): He is working on design and synthesis of fluorescence chemosensor for both human and plant protein interactions.
- iii) **Charu Chand Hansda** (Ph.D ongoing): His work aims towards the design and synthesis of fluorescence chemosensor for allelochemical interactions and metabolism.

➤ **M.Sc thesis supervised:**

- i) ‘Synthesis and Characterization of C₂-Symmetric Bis-Arylaldimine’ by *Sankar Samata*, 2016.
- ii) ‘Synthesis and Characterization of m-Nitro Benzene Based Schiff Base Chimeric molecules’ by *Priyanka Das*, 2016
- iii) ‘Synthesis and Characterization of Schiff Base Derived from o-Nitro Benzene’ by

Shovona Roy, 2016.

- iv) 'Synthesis and Characterization of o-Chloro Benzene Based Schiff Base Ligands' by *Debasmita Mandol, 2016.*
- v) 'Al(III)-Salt as Catalyst Assisted One Pot Diazo Coupling Reaction Under Solvent Free Condition' by *Nirmal Patra, 2012.*
- vi) 'Sn(II)-Salt as Catalyst Assisted One Pot Diazo Coupling Reaction Under Solvent Free Condition' by *Prasenjit Das, 2012.*
- vii) 'Synthesis and Characterization of Chimeric Shiffs Base for Selective Transition Metal Complexes' by *Debabrata Das, 2012.*
- viii) 'One Pot Diazo Coupling Reaction Using Lewis Acid as Catalyst Under Solvent Free Condition' by *Raghunath Dan, 2011.*
- ix) 'Microwave Assisted One Pot Synthesis of Coumerin derivatives' by *Soumendu Mandal, 2009.*
- x) 'Microwave Assisted One Pot Synthesis of β -lactam' by *Sudipta Poiria, 2008.*

➤ **Honors and Certifications :**

- Planning and Budget Commission (PBC) Postdoctoral Fellowship administered by Council for Higher Education, Israel. Sept 2012- Sept 2014
- Institute fellowship by The Hebrew University of Jerusalem. Apr 2012- Aug2014
- **Gold Medalist** in M.Sc Chemistry from Vidyasagar University in the year 2004.
- Short listed (top five) for Shyamaprasad Mukherjee Fellowship(SPM)

➤ **Affiliations :**

- **Life Member** of Chemical Research Society of India (CRSI) since 2007
- **Annual member** of Israel Chemical Society (ICS). 2012-13, 2013-14, 2014-15

➤ **Sponsor Project handled/ Ongoing :**

- i) UGC Minor Project entitled 'Selective and Sensitive Ratiometric Detection of Heavy Metal Ions Using a Pyrene-Antipyrine Based Fluorescent Chemosensor' (2017- ongoing).
- ii) UGC Minor Project entitled 'Preparation of azo dyes using one pot Diazocoupling reaction under microwave irradiation technique.' (2009-2011, completed).