

## Dr. Vivek Mishra

(Assistant Professor-II)

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### Research Interest:

Vivek is currently working as an Assistant Professor in Amity Institute for Click Chemistry Research and Studies (AICCRS) at Amity University, Noida, India. Research work mainly focuses on Click Chemistry, Green Chemistry, Hydrogels, Sensing and controlled radical Polymerization using small organic molecules as precursors and natural polysaccharides. He also focuses on stimuli responsive polymers, Nanogels for targeted drug delivery, Dye removal and degradation.

### Collaboration:

Research group has national and international collaborative partners. 1. Korea Institute of Industrial Technology, South Korea, 2. Jawaharlal Nehru Univ. New Delhi, 3. University of Delhi, New Delhi, 4. Dibrugarh University, Assam, India. 5. Reliance Industries Limited, Mumbai, 6. NIT Srinagar, UK. 7. Banaras Hindu University, Varanasi. and 8. NIPER Hyderabad.

### Professional Association-

1. **Member American Chemical Society** (Member No. 30114841)
2. **Green Chemistry Network Centre, New Delhi** (Life Member No.0641/17/275)
3. **National Environmental Science Academy** (Life Member No. 1952)

### Background:

Dr. Vivek Mishra is currently worked as the Assistant Professor (Guest) in Department of Chemistry, University of Delhi. Before this he was DST SERB-National Post-Doctoral Fellow with Prof. R. K. Sharma at Green Chemistry Network Centre at Department of chemistry, University of Delhi, India. He obtained his doctoral degree in the field of “Synthesis of Functional Polymers through Living Radical Polymerization” from Banaras Hindu University, Varanasi in the year, 2012. Thereafter, he served as a postdoctoral researcher at two reputed institutes in South Korea: University of Ulsan and Korea Institute of Industrial Technology during 2012-14. He worked there in the fabrication of controlled drug release through stimuli responsive polymers and hydrogels and homogeneous and heterogeneous catalysis, CO<sub>2</sub> utilization for carbamate and disubstituted urea production. His research interests focus on the

development of functionalized polymers for their applications in drug delivery, catalysts, biopolymers, nanomaterials, and sensors, etc.

### ACADEMIC ACCOLADES & AWARDS:

1. **EDITORIAL BOARD MEMBER:** American Journal of Physical Chemistry
2. **ADVISORY EDITORIAL BOARD MEMBER:** International Journal of Applied Sciences and Biotechnology
3. **SERB National Post-Doctoral Fellowship (N-PDF) Award** in July 2017
4. **Brain Korea-21 Post-Doctoral Fellowship Award** in April 2012
5. **Extended Senior Research Fellowship, CSIR, New Delhi Award** in April 2012
6. **Senior Research Fellowship,** Award in August 2010
7. **UGC University Research Fellowship** Award in January 2007
8. **National Meritorious Scholarship at Matriculation Level** Award in July 1997

### RESEARCH AND WORK EXPERIENCE:

**SERB National Post-Doctoral Fellow at Department of Chemistry University of Delhi 19.07.2017– 18.07.2019**

Completed under the mentorship of **Prof. R. K. Sharma**, Department of Chemistry, Delhi University

Title of Project: *Synthesis and Characterization of “Green” Controlled radical polymers and its modification via Click Chemistry and their biological application.*

**Post-doctoral Fellow (Specialist) 01.05.2013– 23.05.2014**

Green Process & Material R & D Laboratory, Korea Institute of Industrial Technology, South Korea

**Mentor: Prof. Yong Jin Kim**

**Post-doctoral Fellow (Brain Korea-21) 01.05.2012– 30.04.2013**

Functional Material Research Laboratory, University of Ulsan, South Korea

**Mentor: Prof. Hyung-il Lee**

**Project Assistant (Hydro Processing Laboratory) 16.03.2005– 21.04.2006**

Indian Institute of Petroleum (CSIR Laboratory), Dehradun, Uttarakhand

**Mentor: Dr. G. Murlidhar**

### Personnel:

Group is looking for self-motivated fellows who want to work in chemistry, Green Chemistry, chemical biology and Drug delivery. NET qualified students are highly encouraged to apply and National post-doctoral fellows are welcome.

## International Patents:

1. Yong-Jin Kim, **Vivek Mishra**, Guang Meang Son, Jin Ku Cho, Baek Jin Gim; Process for preparing disubstituted urea and carbamate compounds from amines, carbon dioxide, and epoxides

**US Patent 2016; 9,273,016 B2 (dated: 2016-03-01)**

2. Yong-Jin Kim, **Vivek Mishra**, Guang Meang Son, Jin Ku Cho, Baek Jin Gim-Process for preparing disubstituted urea and carbamate compounds from amines, carbon dioxide, and epoxides

**US Patent 2016; 9,233,939 B2 (dated: 2016-01-12)**

3. Yong-Jin Kim, **Vivek Mishra**, Guang Meang Son, Jin Ku Cho, Baek Jin Gim; Manufacturing method of substituted urea and carbamate-based compounds from amine, carbon dioxide and epoxy compound

**Korean Patent No. 10-2015-0055767 (dated: 2015.05.22)**

4. Yong-Jin Kim, **Vivek Mishra**, Guang Meang Son, Jin Ku Cho, Baek Jin Gim; Method for producing substituted urea and carbamate compound from amine, carbon dioxide and epoxy compound

**Japanese Patent No. JP 2015-93870 A (dated: 2015.05.18)**

## Books:

5. **Vivek Mishra** and Rajesh Kumar, Functional controlled/ living radical polymers: Synthesis, kinetics and physico-chemical properties, (2013)

*Lambert Academic Publishing* GmbH & Co. KG, Germany, [ISBN: 978-3-659-35577-6]

## Publications:

6. **Vivek Mishra\*** and R Kumar, Cyclic Polymer of N-Vinylpyrrolidone via ATRP protocol, kinetic study and Concentration effect of polymer on click chemistry in solution, *Polymer Science Series B*, **2019**, 61(6), 743–751.

**Impact factor: 0.907**

7. G. M. Son, C. C. Truong, D. K. Mishra, **Vivek Mishra\***, and Y. J. Kim\*, One Pot Synthesis of Disubstituted Urea from CO<sub>2</sub>, Propylene Oxide, and Amines Catalyzed by Imidazolium- Tetraiodoindate, *Bulletin of the Korean Chemical Society*, **2018**, 39 (2), 174-183.

**Impact factor: 0.602**

8. **Vivek Mishra**, J K Cho, S-H Shin, Y-W Suh, H S Kim, and Y J Kim, Ruthenium-Na<sub>2</sub>CO<sub>3</sub> catalyzed one-pot synthesis of ring hydrogenated carbamate from aromatic amine and propylene carbonate, *Applied Catalysis A: General* **2014**, 487, 82–90.

**Impact factor: 4.630**

9. S G Oh<sup>†</sup>, **Vivek Mishra<sup>†</sup>**, J K Cho, B J Kim, H S Kim, Y-W Suh, H-j Lee, H S Park and Y J Kim, One pot catalytic NO<sub>2</sub> reduction, ring hydrogenation, and N-alkylation from nitroarenes to generate alicyclic amines using Ru/C-NaNO<sub>2</sub>, *Catalysis Communications* **2014**, 43, 79-83.

**Impact factor: 3.674**

**10. Vivek Mishra**, S-H Jung, H M Jeong and H-il Lee, Thermoresponsive ureido-derivatized polymers: Effect of quaternization on UCST properties, *Polymer Chemistry* **2014**, 5(7), 2411-2416.

**Impact factor: 4.760**

**11. Vivek Mishra**, S-H Jung, J M Park, H M Jeong and H-il Lee, Triazole containing hydrogels for time dependent sustained drug release, *Macromolecular Rapid Communications* **2014**, 35(4), 442-446.

**Impact factor: 4.078**

**12. Vivek Mishra** and R Kumar, Grafting of 4-aminoantipyrine from guar gum substrates using graft atom transfer radical polymerization (ATRP) process, *Carbohydrate Polymers* **2011**, 86, 296-303.

**Impact factor: 6.044**

**13. Vivek Mishra** and R Kumar, Synthesis and characterization of five-arm star polymer of N-vinyl pyrrolidone through ATRP based on glucose, *Carbohydrate Polymers* **2011**, 83, 1534-1540.

**Impact factor: 6.044**

**14. Vivek Mishra** and R Kumar, Uptake of hazardous heavy metal ions by aqueous solution of poly (acrylamide) prepared through atom transfer radical polymerization process, *Journal of Applied Polymer Science* **2013**, 128, 3295-3307.

**Impact factor: 2.188**

**15. Vivek Mishra** and R Kumar, RAFT polymerization of N-vinyl pyrrolidone using prop-2-ynyl morpholine-4-carbodithioate as a new chain transfer agent, *Journal of Applied Polymer Science* **2012**, 124, 4475-4485.

**Impact factor: 2.188**

**16. Vivek Mishra** and R Kumar, Graft copolymerization of Carboxymethylcellulose: An overview, *Trends in Carbohydrate Research* **2012**, 14(4), 1-17. (Invited Articles)

**17. Vivek Mishra** and R Kumar, Living Radical Polymerization: A Review, *Journal of Scientific Research*, **2012**, 56, 141-176.

**18. A Srivastava, Vivek Mishra**, P Singh, and R Kumar, Coumarin-based polymer and its silver nanocomposites as advanced antibacterial agents: Synthetic path, kinetics of polymerization, and applications, *Journal of Applied Polymer Science* **2012**, 126, 395-407.

**Impact factor: 2.188**

**19. A Srivastava, Vivek Mishra**, P Singh, A Srivastava and R Kumar, Comparative study of thermal degradation behaviour of graft copolymers of polysaccharides and vinyl monomers, *Journal of Thermal Analysis and Calorimetry* **2012**, 107, 211-223.

**Impact factor: 2.471**

**20. A Srivastava, Vivek Mishra**, S K Singh and R Kumar, Vanadium (V)/Mandelic acid-initiated graft copolymerization of acrylamide onto guar gum in an aqueous medium, *Journal of Applied Polymer Science* **2010**, 115, 2375-2385.

**Impact factor: 2.188**

**21. A Srivastava, Vivek Mishra**, S K Singh and R Kumar, One pot synthesis and characterization of industrially important graft copolymer (GOH-g-ACM) by using peroxy monosulphate/ mercapto succinic acid redox pair, *E-Polymers* **2009**, 6, 1-14.

**Impact factor: 1.491**

## Organizing Committee Members of Conferences:

1. XV Junior-National Organic Symposium Trust (J-NOST) 2019, organised by Department of Chemistry, University of Delhi, Delhi-110007, INDIA held on 18-21 October 2019.
2. National Conference on “Recent Trends in Chemical Sciences” and RSC Workshop on “Periodic Table: Boon for Mankind” organised by Green Chemistry Network Centre, Department of Chemistry, University of Delhi, Delhi-110007, INDIA held on 30 August-1<sup>st</sup> September 2019.
3. 6th World Congress on Nano-medical Sciences (Chemistry Biology interface: Synergistic in new frontiers & Science and Technology for the future of mankind (ISNSCON-2018) organized by University of Delhi and Jamia Hamdard at Vigyan Bhawan, Delhi, INDIA held on 7-9 January 2019.
4. National Conference on Chemistry for Human Health and Environment (CHHE-2018) at Department of Chemistry, University of Delhi, Delhi-110007, INDIA held on 15-16 December 2018.
5. International conference on sustainable initiatives in water management, Manav Rachna University, Faridabad and Green Chemistry Network Centre, Delhi University March 06, 2018.

## Reviewer of Journals:

### Royal Society of Chemistry (RSC) Journals

Chemical Communications; Polymer Chemistry; RSC Advances

### Elsevier Journals

Dyes and Pigments; Carbohydrate Polymers; Reactive and Functional Polymers; Journal of Molecular Liquids

### Wiley Interscience Journals

Journal of Applied Polymer Science; Bulletin of Korean Chemical Society; Reports in Organic Chemistry

## Conferences:

1. Role of  $\pi$ - $\pi$  stacking in triazole ring containing hydrogels for sustained drug release, 6th World Congress on Nano-medical Sciences (Chemistry Biology interface: Synergistic in new frontiers & Science and Technology for the future of mankind (ISNSCON-2018) organized by University of Delhi and Jamia Hamdard at Vigyan Bhawan, Delhi, INDIA held on 7-9 January 2019. (Oral Presentation)
2. Triazole ring containing hydrogels for sustained drug release, International workshop and symposium on green chemistry & technology; PG Department of Chemistry, Govt. Dungar College, Bikaner; 15-17 October 2018. (Oral Presentation)
3. National workshop on Thieme Chemistry: Science of Synthesis; Department of Chemistry, University of Delhi on 28 September 2018. (OP)
4. Sustainable Route for the Production of Environmentally Friendly Polyurethane precursors through Amines, CO<sub>2</sub>, and Biomass, International Conference on Advancing Green Chemistry: Building a Sustainable Tomorrow; Green Chemistry Network Centre, Department of Chemistry, University of Delhi & Hindu College, University of Delhi; 3-4 October 2017 (Oral Presentation, OP-15)

5. ATRP of 4-aminoanipyrine from guar gum in ecofriendly environment; National Seminar on Impact of Environmental Changes on Human Life; Sadanlal Sanwaldas Khanna Girls' Degree College, Allahabad; 20-21 November 2010. (Oral Presentation A-109)
6. A highly efficient functionalized chelating polymer sorbent for rapid and selective extraction of ferrous ions from water sample, UGC Funded National Conference on "Recent advances in chemical sciences towards Green & Sustainable Environment-Swachh Bharat Abhiyaan Perspective; Aditi Mahavidhyalaya, Bawana; University of Delhi; 10-11th October 2017. (Poster Presentation PP-13)
7. Functionalized silica based organic-inorganic hybrid adsorbent for rapid and selective extraction of copper ions from various samples, International Conference on Advancing Green Chemistry: Building a Sustainable Tomorrow; Green Chemistry Network Centre, Department of Chemistry, University of Delhi & Hindu College, University of Delhi; 3-4 October 2017 (Poster Presentation PP-08)
8. One pot synthesis of ruthenium-catalyzed ring hydrogenated carbamate from aromatic amine and propylene carbonate; 2014 KSIEC Spring Meeting; The Korean Society of Industrial and Engineering Chemistry, South Korea; April 30- May 02, 2014 (PP-300)
9. Synthesis and Characterization of Guar Gum based ATRP Initiator and Studies on Graft copolymerization of 4-Aminoantipyrine; POLYCHAR19-World Forum on Advanced Materials; Tribhuvan University & Nepal Polymer Institute, Kathmandu, NEPAL; Mar21-24, 2011
10. Functionalization of Carbon Nano Tubes by in situ Living Radical Polymerization Process; Multifunctional material; Depart. of Physics, Banaras Hindu University, Varanasi; Dec 7- 9, 2010 (Poster Presentation)
11. One pot synthesis and characterization of industrially important graft copolymer; POLYCHAR 16-World Forum on Advanced Materials; POLYCHAR World forum of advance materials and University of Lucknow, Lucknow; Feb 17-21, 2008 (Poster Presentation-91)
12. Light Emitting Organic Polymers; (APACON-2008); Advances in Polymer Science and Technology; Indian Habitat Centre, Indian Institute of Technology, New Delhi; Jan 28-31, 2008 (Poster Presentation CONP-PO-10)
13. Reversible Addition-Fragmentation Chain Transfer Polymerization of N-Vinyl Pyrrolidone using prop-2-ynyl morpholine-4-carbodithioate: A new RAFT Agent; Current concepts & Frontier advances in Science Educational Research; Department of Chemistry, TD College, Jaunpur; March 05-06, 2011 (Poster Presentation)
14. Synthesis and characterization of L-tryptophan based vinyl monomer and their controlled polymerization by RAFT Process; (ETCS-2011) Emerging Trends in Chemical Sciences; Department of Chemistry, Banaras Hindu University, Varanasi; Feb.19-20, 2011.
15. Synthesis and Characterization of Coumarin Based Allyl Monomer and its Atom Transfer Radical Polymerization using 2-Bromoisobutyryl Bromide in toluene; 13th CRSI-2011; NISER and KIIT University, Bhubaneswar, INDIA; Feb. 4-6, 2011 (Poster Presentation)
16. Well-Defined Synthesis of Polymers through Atom Transfer Radical polymerization and its cyclization using Click chemistry; 12th CRSI and 4th CRSI-RSC Symposium in Chemistry; Indian Institute of Chemical Technology, Hyderabad; Feb 04-07, 2010. (PP-117)
17. International conference on sustainable initiatives in water management, Manav Rachna University, Faridabad and Green Chemistry Network Centre, Delhi University March 06, 2018, (Organizer/Participant)

18. International seminar on “Effect of pollution on human health” jointly organized by Department of chemistry, University of Delhi and Indian Academy of biomedical sciences (IABS) on 1st December 2017.
19. National Symposium on Current trends in Chemistry; Deptt. of Chemistry, Banaras Hindu University, Varanasi, INDIA; March 24-25, 2007
20. 14th CRSI National Symposium in Chemistry (NSC-14); CSIR-NIIST Thiruvananthapuram, INDIA; Feb. 3-5, 2012.
21. Attended all the lectures and participated in “Molecular Spectroscopy: Theory, Instrumentation and Applications”; Science Academies’ lecture Workshop; Department of Chemistry, Banaras Hindu University, Varanasi; March 02-03, 2012
22. “Short Course on Polymer Characterization” POLYCHAR19–World Forum on Advanced Materials; Tribhuvan University and Nepal Polymer Institute, Kathmandu, NEPAL; March 20, 2011
23. Workshop on Multifunctional material; Department of Physics, Banaras Hindu University, Varanasi; Dec 6, 2010.

### Contact Details:

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