

Dr. SHIV KUMAR ALWERA

PostDoc Chemistry (Polymer),

Indian Institute of Science Education and Research Mohali,
Panjab, India.

Ph.D. Chemistry (Organic + Analytical),

Department of Chemistry, Indian Institute of Technology
Roorkee, India.

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PROFILE:

- Highly self-motivated and enthusiastic candidate with strong interpersonal skills in developing new improve methods for chromatography, synthesis, polymer and enantioseparation of racemic pharmaceuticals.
- **Experimental techniques:** Habitual to use High performance liquid chromatography (HPLC), preparative HPLC, LCMS, UV-Visible, FTIR, Size Exclusion Chromatography (GPC), Open column chromatography, TLC, Polarimetry and having knowledge of Microwave synthesis reactor, GCMS, HRMS, UV-Vis Photoluminescence, NMR, SEM, TEM, XRD and Gaussian 09 theoretical studies software.
- **Computer skills:** Windows; MS-office, Gaussian, Spartan, Chem-Draw, Chem Chraft and Origin.

EDUCATION and CAREER

- **Genesis of Chemistry (Research Consultancy Organization)**
Scientist (Oct 2020-present)
- **Indian Institute of Science Education and Research Mohali, Chandigarh, Panjab, India**
PostDoc Chemistry (Polymer), June 2018- June 2020
- **Indian Institute of Technology Roorkee, Uttrakhand, India**
Ph.D. Chemistry (Organic + Analytical), April 2018
- **Jaipur National University, Rajasthan, India**
M.Sc. Chemistry (Organic), 2012
- **University of Rajasthan, Rajasthan, India**
B.Sc. Chemistry Honors, 2010

Details:

Name	Dr. SHIV KUMAR ALWERA
Date Of Birth	08/04/1989 (Age 32 year)
Nationality	INDIAN
Permanent address	ALWERA BHAWAN, NEAR JAIN MANDIR DAYA NAGAR, 60 FEET ROAD, ALWAR, RAJASTHAN, PIN CODE 301001.
E-mail	Ashiv.kumalwera@gmail.com ; Alwerashiv1989@gmail.com

Contact Number	07409859070				
Educational qualifications	Name of the Board/ University	Year passed	Division	Subject	% of Marks
10+2/ Higher Secondary equivalent	Board of Secondary Education, Rajasthan	2006	First	Chemistry, Biology, Physics, English, Hindi	74.46
B.Sc. Chemistry Honors	University of Rajasthan	2010	First	Chemistry (Honors), Zoology	62.06
M.Sc Chemistry	Jaipur National University	2012	First	Specialization Organic chemistry	78.25
Ph.D. Chemistry	Indian Institute of Technology Roorkee (IIT Roorkee)	2018 (Defended: 13 April 2018; Degree awarded: 7 Oct 2018)	Title: Resolution of Certain Racemic Pharmaceuticals By Liquid Chromatography (excellent examiner report with ‘A’ grade)		
Postdoc Chemistry (Polymer)	Indian Institute of Science Education and Research Mohali	2020 (June 2020)	Title: Synthesis of Bidentate Functionalize Polymer-Based New Stationary Phase for Chiral Separation		
CSIR-JRF-NET/GATE	Subject		Year		
	UGC-JRF-NET CHEMICAL SCIENCES		2012		
	UGC-JRF-NET (CHEMICAL SCIENCES)		2013		
	UGC- NET (CHEMICAL SCIENCES)		2013		
GATE	GATE (CHEMISTRY)		2013		
GATE	GATE (CHEMISTRY)		2015		

HONORS and FELLOWSHIP:

- Postdoc Fellowship, MHRD (June 2018- June 2020)
- Senior Research Fellowship, UGC (July 2015-April 2018)
- Junior Research Fellowship, UGC (July 2013-June 2015)
- UGC-NET-JRF (Chemical Sciences; Dec 2012)
- UGC-NET-JRF (Chemical Sciences; June 2013)
- UGC-NET (Chemical Sciences; Dec 2013)
- GATE -2013 (Chemistry)
- GATE -2015 (Chemistry)
- National Service Scheme (NSS), India (2008-2010)
- Volunteer in 19th National Children Sciences Congress (2011)
- Volunteer in Ishan Vikas program (2015)
- Volunteer in Ishan Vikas program (2017)

RESEARCH INTEREST:

- Development of new methods for enantioseparation by improving/replacing old traditional methods.
- Synthesis of new more efficient chiral stationary phases and new chiral derivatizing reagents.
- Introduce green chemistry in chromatographic separation.
- Separation of racemates in the achiral environment.
- Theoretical study for developing mechanism of interactions of analyte during chromatographic separation.
- Polymer Chemistry.
- Theoretical aspects in chemistry.
- Nano particle synthesis, Metal catalysts/organometallics.
- Water splitting/oxidation.
- CO₂ capture.

REASERCH EXPERIENCE:

Indian Institute of Science Education and Research Mohali, India

Postdoc candidate, June 2018 - June 2020

- Synthesis of Polymer based Chiral Stationary Phase (CSP) and its application in enantioseparation
 - Theoretical observation of polymer based CSP
- I am currently working on “development of polymer-based chiral stationary phases,” and its application in enantioseparation of racemic compounds. Also, in the future, after completing synthesis, the theoretical studies will be carried out to develop CSP.

Indian Institute of Technology Roorkee, India

Ph.D. Candidate, 2013-2018

- Synthesis of new CDRs (chiral derivatizing reagents),
- Synthesis of new CSPs (chiral stationary phases),
- Enantioseparation of Chiral compounds,
- Micellar chromatography (green analytical methods), and
- Computational study for stability of analytes and their elution order

During my Ph.D., I worked on enantioseparation of racemates *via* direct and indirect approaches by preparing new chiral derivatizing reagents and new chiral stationary phase. Also, I am the first who introduced green analytical methods for enantioseparation approaches (HPLC). I also worked on theoretical computation chemistry, and optimized lowest energy structures of synthesized derivatives and determined their chromatographic elution orders.

Jaipur National University, Rajasthan, India

M.Sc. Organic Chemistry, 2010-2012

Project (6 month), **Topic:** Nitration Reactions: Preparation, Identification and uses of Products

TEACHING EXPERIENCE:

Indian Institute of Science Education and Research Mohali, Chandigarh, Panjab, India

❖ Teaching Assistant

- BS-MS, Chemistry practical, July-Nov 2019
- BS-MS, Chemistry practical, January-May 2020

Indian Institute of Technology Roorkee (IITR), Department of Chemistry, Roorkee, India.

❖ **Teaching Assistant**

- B.Tech. Chemistry practical, Jan-May 2015
- M.Sc. Chemistry practical, July-Nov 2015
- M.Sc. Chemistry practical, Jan-May 2016
- M.Sc. Chemistry practical, July-Nov 2016
- M.Sc. Chemistry practical, Jan-May 2017

❖ **Project Guidance**

➤ **Supervised M.Sc and Project students to complete their projects**

- Komal Malik, M.Sc. Chemistry, Jan-May 2015
- Anu Dalal, M.Sc. Chemistry, Jan-May 2016
- Mohd Zain Haider Kazmi, M.Sc. Chemistry, Jan-May 2017
- Abhijit E. S., May-July 2016 (Funded by Indian Academy of Sciences)
- Vikash Kumar, May-July 2017 (Funded by Indian Academy of Sciences)
- Asha Ramesh, July 2018-2019 (IISER Mohali)

➤ **Supervised and helped Ph.D. research scholar**

- Poonam Malik (Funded by CSIR Fellowship)

CAREER PLANS:

I want to devote my career in research and administration service because I am fond of learning new things and knowledge, and my great interest is to develop new ideas and inventions which can be used in human advancement, and also want to train other students what I have learned and will help them to become great leaders and good researcher.

WORK STYLE:

- Willing to perform basic tasks and move on to solve complex problems.
- Able to learn new knowledge and adapt to new environments quickly.
- Strong independent work style and excellent teamwork skill.
- Good leader and motivator.
- Well-organized and passionate.

PUBLICATIONS:

1. **Shiv Alwera**, Ravi Bhushan, (*RS*)-Propranolol: enantioseparation by HPLC using newly synthesized (*S*)-levofloxacin based reagent, absolute configuration of diastereomers and recovery of native enantiomers by detagging, Biomedical Chromatography, 30 (2016) 1223-1233. <https://doi.org/10.1002/bmc.3671>
2. **Shiv Alwera**, Ravi Bhushan, Liquid chromatographic enantioseparation of three beta-adrenolytics using new derivatizing reagents synthesized from (*S*)-ketoprofen and confirmation of configuration of diastereomers, Biomedical Chromatography, 30 (2016) 1772-1781. <https://doi.org/10.1002/bmc.3752>
3. **Shiv Alwera**, Ravi Bhushan, RP-HPLC enantioseparation of β -adrenolytics using micellar mobile phase without organic solvents, Biomedical Chromatography, 31 (2017). <https://doi.org/10.1002/bmc.3983>

4. **Shiv Alwera**, Ravi Bhushan, Micellar liquid chromatography for enantioseparation of β -adrenolytics using (*S*)-ketoprofen-based reagents, Journal of liquid chromatography & related technologies, 40 (2017) 707-714. <https://doi.org/10.1080/10826076.2017.1348954>
5. **Shiv Alwera**, Ravi Bhushan, Liquid chromatographic enantioseparation of racemic β -blockers via synthesis of diastereomeric amides and (*S*)-levofloxacin esters as chiral derivatizing agents, Nature protocol exchange, 2018, doi:10.1038/protex.2017.150
6. **Shiv Alwera***, In Situ Derivatization of (*RS*)-Mexiletine and Enantioseparation Using Micellar Liquid Chromatography: A Green Approach, **ACS Sustainable Chemistry and Engineering**. 6 (2018), 11653–11661. <https://doi.org/10.1021/acssuschemeng.8b01869>
7. **Shiv Alwera***, Vijay Alwera and Suman Sehlangia, An efficient method for the determination of enantiomeric purity of racemic amino acids using micellar chromatography, a green approach, Biomedical Chromatography, 2020, 34(11), e4943, 1-9. <https://doi.org/10.1002/bmc.4943>.
8. Vijay Alwera, Suman Sehlangia and **Shiv Alwera***, Micellar Liquid Chromatographic Green-Enantioseparation of Racemic Amino Alcohols and Determination of Elution Order, Biomedical Chromatography, 2020. 34(12), e4954, 1-7, <https://doi.org/10.1002/bmc.4954>
9. Vijay Alwera, Suman Sehlangia and **Shiv Alwera***, A sensitive micellar liquid chromatographic method for the rectification of enantiomers of esmolol, and determination of absolute configuration and elution order, Journal of Liquid Chromatography & Related Technologies, 2020, 43, 742-749. <https://doi.org/10.1080/10826076.2020.1798250>
10. Vijay Alwera, Suman Sehlangia and **Shiv Alwera***, Enantioseparation of Racemic Amino Alcohols using Green Micellar Liquid Chromatography and Confirmation of Absolute Configuration with Elution Order, Separation science and Technology, 2021, 56(13), 2278-2286. <https://doi.org/10.1080/01496395.2020.1819826>
11. Vinod Kumar Vashistha · Anuj Kumar, Dipak Kumar Das, **Shiv Alwera**, Renu Vyas, Vivek Sharma, Sonika Sethi, Rajasekhar Pullabhotla, Hariom Nagar, Different approaches in thin-layer chromatography for enantioresolution of acebutolol using colistin sulfate as chiral selector, Journal of planner chromatography-Modern TLC, 2021, 34, 211-215. <https://doi.org/10.1007/s00764-021-00109-5>
12. **Shiv Alwera* and other co-authors**, Synthesis of Levofloxacin Based Chiral Reagent and its Application in Determination of Optical Purity of Essential Racemic Amino Acids using RP-HPLC, Research Journal of Chemistry and Environment, 2022, 26(2), 1-8.
13. H. S. Shehri, V. Alwera, K. C. Nilugal, K. K. Joshi and **Shiv Alwera**, Synthesis of Cyanuric Chloride based Chiral Reagents for RP-HPLC Enantioseparation of (*RS*)-Propranolol, Asian Journal of Chemistry, 2022, 34(2), 376-382. <https://doi.org/10.14233/ajchem.2022.23550>
14. T. I. Ahmed, V. Alwera², V S. Talismanov, N. Jaishetty, S. Sehlangia and **Shiv Alwera**, Pre-column derivatization and separation of diastereomeric-derivatives of racemic mexiletine, and confirmation of elution order and molecular configuration, Asian Journal of Chemistry, 2022, accepted.
15. H. S. Shehri, M. S. Patel, **Shiv Alwera**, V.S. Talismanov, V. Alwera, and R. R. Macadangdang JR, Photocatalytic Degradation of Rhodamine B by Using Tin-Doped CeO₂-Fe₂O₃ Nanocomposite, Asian Journal of Chemistry, 2022, accepted.
16. **Shiv Alwera**, V. Alwera, D. Domyati, Synthesis and Characterization of Sn-Doped CeO₂-Fe₂O₃ Nanocomposite and Application in Photocatalytic Degradation of Sudan I, Biointerface Research in Applied Chemistry, 2022 (communicated).

Few research paper ready to communicate (2022).

CONFERENCES:

- **Shiv Alwera*** and Ravi Bhushan, Green micellar chromatography for enantioseparation of DL-Selenomethionine using (S)-ketoprofen based activated ester, 21th CRSI National Symposium in Chemistry, 2017.
- **Shiv Alwera*** and Ravi Bhushan, Synthesis of (S)-ketoprofen based chiral reagents and its application for enhance detection and HPLC enantioseparation of sulphur containing amino acids, Contemporary Facets in Organic Synthesis (CFOS), 2017.
- **Shiv Alwera***, Green micellar chromatography for enantioseparation of racemic compounds using (S)-levofloxacin based activated ester, Sustainable Chemistry for Health, Environment and Materials (Su-Chem), 2018.

WORKSHOPS:

- Nano Drug Delivery System (*Industry-Academia Interaction*) (2015), Centre of Excellence: Nanotechnology, Indian Institute of Technology Roorkee.
- Noval Thermoelectric Materials (2016), Quality Improvement Programme Centre, Department of Chemistry, Indian Institute of Technology Roorkee.
- Training Workshop on Reference Management Software-Mendeley (2017), Mahatma Gandhi Central Library, Indian Institute of Technology Roorkee.
- Seminar on Plagiarism and Impact of Research (2017), Mahatma Gandhi Central Library, Indian Institute of Technology Roorkee.
- Scientific Validation of Traditional Knowledge-II (Feb. 24-25, 2017), Department of Management Studies, Indian Institute of Technology Roorkee.
- Science Academies Lecture Workshop on Emerging Trends in Bioinorganic Chemistry (March 8-10, 2018), Department of Chemistry, Indian Institute of Technology Roorkee.

References

Dr. Raj Kumar Roy Assistant Professor, Department of Chemical sciences, IISER Mohali (Postdoc supervisor)	Email Id: raj@iisermohali.ac.in Contact Number : +91-9679936646 Address: AB-2, IISER Mohali, Mohali, Chandigarh, Panjab, India.
Prof. Ravi Bhushan Professor, Department of Chemistry, IIT-Roorkee. (PhD supervisor)	Email Id: rbushfcy45@gmail.com Address: Department of Chemistry, Indian Institute of Technology Roorkee, Haridwar, India, 247667.
Dr. P C Thalpiyal Principal Scientist (Associate Professor), CSIR-Central Building Research Institute.	Email Id: pct866@yahoo.com Contact Number: +91-9412071040 Address: CSIR-CBRI, CBRI Colony, Roorkee, Uttarakhand, India, 247667