Ajay Sharma

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Important link

- **Google Scholar:** https://scholar.google.co.in/citations?user=DTAxnFQAAAAJ&hl=en
- **Research Gate:** https://www.researchgate.net/profile/Ajay-Sharma-39/stats
- **Linkedin:** https://www.linkedin.com/in/ajay-sharma-58751591/

Summary

- Experienced analytical chemist with a strong foundation in mass spectrometry, food chemistry and biochemistry. Skilled in characterization and identification of compounds using a diverse range of analytical techniques, Mass spectrometry, RF-HPLC-DAD, LC-MS/MS, GC-MS/MS, GCxGC-TOF and HPTLC. Additionally, well-versed in method development and validation for the identification of various small molecules, contaminants, adulterants and plant toxins using chromatographic techniques coupled with Mass spectrometry.

Core competencies

- I am self-motivated and highly organized with the ability to work in an interdisciplinary environment to meet the deadlines with logical and analytical approach.
- Beside creative and open-minded approach, I also have the potential to integrate existing scientific knowledge to formulate a new research problem.
- Alongside developing a new network and collaborations, I also have the ability to grasp and learn new things quickly.

Technical skills

- **Analytical Chemistry:**
  - New method development and validation for contaminants (fumigants and pesticides), adulterants (mineral oils and illegal diyes) and plant toxins.
  - Development and validation of novel and innovative extraction, isolation and purification processes.
  - Protein separation and purification by SEC and HIC chromatography. Fast photochemical oxidation of Protein.
  - Qualitative and quantitative analysis of various contaminants, adulterants and plant toxins using UV-Visible, FT-IR, HPTLC, RF-HPLC, LC-MS/MS, GC-MS/MS and GCxGC-TOF.
- **Isolation and Synthesis:** Isolation of secondary metabolites, isolation of essential oil, phytochemical analysis of medicinal plants (qualitative and quantitavie analysis), small molecules synthesis, small molecule derivatization, reaction condition optimization and scale up, air-sensitive and moisture-sensitive reactions, column chromatography, flash column chromatography, experience working with light-sensitive compounds.

- **Instrumentation:** UV-Visible spectrophotometer, FT-IR, RP-HPLC-DAD, LC-MS/MS, GC-MS/MS, GC-GC TOF, SEC-MALS, HPTLC.
- **Applications:** SciFinder, Microsoft office, Chem-Draw, Chem-Scach, Origin, Statistica, NIST EI database.

Education

Ph.D. *July, 2012 – Jun, 2019*
SLIET, Longowal, Sangrur, Punjab, India
Research topic: Isolation and characterization of major compounds from *Nepeta leucophylla*, their derivatization and evaluation of biological potential

MS, Chemistry *July, 2009 – September, 2011*
Punjab Agricultural University, Ludhiana, Punjab, India
Research topic: Chemistry and evaluation of Neem extracts against *Tribolium castaneum* (Herbest)

B.Sc., Chemistry *July, 2006 – Jun, 2009*
Govt. College Hoshiarpur, Panjab University, Chandigarh, India

Honors and Awards

- **Award of Postdoctoral Research Fellowship –** At Department of Biomolecular Sciences, School of Phamacy, Un iversity of Mississippi, Oxford USA (April 2024 – till date)
- **Third Prize in Poster Competition,** Postdoc Section at School of Pharmacy Research Day Spring 2025, University of Mississippi.
- **Award of INSPIRE fellowship (SRF)** for Pursuing Ph.D. given by DST Govt. of India (INSPIRE CODE IF-120715), (May 2015 – July 2017).
- **Award of INSPIRE fellowship (JRF)** for Pursuing Ph.D. given by DST Govt. of India (INSPIRE CODE IF-120715), (February 2013 to May 2015).
- **MHRD fellowship Award for Ph.D** (July 2012 to Jan 2013, Topper of All India SLIET Ph.D entrance test).
- **1st Prize in Poster presentation at National Conference** (NICS-2016) October 21-22, 2016, Department of Chemistry, SLIET, Longowal, Sangrur (PB).
- **Best Poster Award in (TSFS-2016),** 7-8, Oct, 2016, Department of Food Engineering and Technology, SLIET, Longowal, Sangrur (PB).
- **Role of honor from PAU Ludhiana** for highest percentage in M.Sc., 2011.
- **Merit Certificate** of academics and sports during M.Sc. and B.Sc [PAU Ludhiana (2009-2011) and Govt. College Hoshiarpur(2006-2009).
- **Merit-cum-topper scholarship during** M.Sc. (PAU Ludhiana), 2009-2011.
- **First and Second Prizes** in Science fair at district level during schooling, 2002-2006.
- **Gold medal** in middle school (for achievement in academics and sports), 2002.

Experience

The university of Mississippi **Oxford, Mississippi, USA**
Postdoctoral Research Fellow *April, 2024 – Till date*

- Conducting research on protein purification using SEC and HIC chromatography, protein oxidation via FPOP, digestion, LC-MS/MS analysis, and data interpretation using BYONIC and Foxware software.
- Designing and optimizing experimental protocols, as well as contributing to academic writing and publication efforts.
- Providing guidance and support to graduate and undergraduate students in the laboratory.
- Managing laboratory operations, including oversight of analytical work (e.g., HPLC, LC-MS/MS, FOX), consumable inventory, service management, and addressing equipment breakdowns.
- Participating in training programs, national and international conferences, and faculty development initiatives.

Nestle R&D Centre **Manesar, Gurugram, India**
R&D Senior Executive (NFSI Adulteration) *July, 2022 – March, 2024*

- Project management activity for food adulteration related projects, which includes time management, finance management, I2L project management, internal lab instruction/R&D report publications.
- Lead, manage and support projects to deliver business needs aligned to global strategy in collaboration with NIFSAS/NR/R&D/NQAC.
- Plan and deliver technical and scientific experiments for projects together with NR/R&D/NQAC
- Lab management – New lab setup, analytical work monitoring (instruments like GC-MS, GCXGC-TOF, LCMS, HPTLC), consumable and service management, breakdown management.
- Collaboration with various academic institutes for food adulteration related Nestle R&D projects. Development of intern/trainee/ FSSAI Junior food analyst.

Chandigarh University **Punjab, India**
Assistant Professor *August, 2018 – July, 2022*

- Teaching of M.Sc. and B.Sc. classes (Bio-organic Chemistry, Heterocyclic Chemistry, Medicinal Chemistry, Spectroscopy and Computational Techniques etc.
- Supervision of various chemistry teaching laboratories.
- Supervision of Ph.D, M.Sc. dissertation students, summer training students, seminar students.
- Evaluation of answer booklets of internal and final examinations.
- Demonstrated how to write effective drafts, present during seminars, and work safely in the lab while handling hazardous chemicals.
- Academic duties such as training placement coordinator, laboratories in-charge, student mentors examination duties etc.
- Designing experiments and statistical interpretation of research results.

- Proposing, writing and reviewing research articles, review papers and book chapters.
- Participation in training programs, conferences (national and internationals) and faculty development programs.

Mentoring Experience

1. Sarvpreet Singh (M.Sc, 2017-19) Dissertation Title: "Green synthesis of metal nanoparticles using polyphenolic rich root extract of *Codonopsis clematidea* and evaluation of their biological potential" Chandigarh University, Mohali.
2. Sharmila Wahengbam (M.Sc, 2018-20) Dissertation Title: "Green Route for The Synthesis of Zinc Oxide Nanoparticles using Sea buckthorn Leaves and Giloy Twig Extracts and Evaluation of Their Antioxidant Potential" Chandigarh University, Mohali.
3. Anikesh Bhardwaj (M.Sc, 2018-20) Dissertation Title: "Green synthesis of TiO2 nanoparticles using *Nepeta leucophylla* root methanol extract and phytochemical analysis of plant extract" Chandigarh University, Mohali.
4. Aheibam Denish Singh (M.Sc, 2019-21) Dissertation Title: "Efficient green synthesis of monodispersed silver nanoparticles using bioactive Sea buckthorn extract and its characterization" Chandigarh University, Mohali.

SLIET Longowal ***Punjab, India***

Senior Research Fellow – INSPIRE felloship DST (Ph.D) *May, 2015 – July, 2017*

- **Project 1:** Isolation of major compounds from biologically active extracts with the help of chromatographic techniques. Derivatization of isolated pure compounds.
- **Project 2:** Isolation of essential oils from different parts of *Nepeta leucophylla*, their characterization using GC-MS and evaluation of their biological potential.
- Published one research article and one review article from the work of project 1 and 2 and one is submitted for publication.

SLIET Longowal ***Punjab, India***

Junior Research Fellow – INSPIRE felloship DST (Ph.D) *February, 2013 – May, 2015*

- **Project 1.** Isolation of bioactive extracts using different organic solvents from different parts of *Nepeta leucophylla* and evaluation of their biological potential.
- **Project 2.** Qualitative and quantitative phytochemical analysis of isolated extracts using RH-HPLC-DAD and GC-MS.
- Published three research articles and book chapter from the work of project 1 and 2.

SLIET Longowal ***Punjab, India***

Junior Research Fellow – MHRD felloship (Ph.D) *July, 2012 – February, 2013*

Publications (* corresponding author)

Total – 71; Research Paper – 24, Review Paper – 20, Books – 07, Book Chapter - 20

Research Papers

1. **Sharma A.*** and Cannoo D. S. (2016) Comparative evaluation of extraction solvents/techniques for antioxidant potential and phytochemical composition from roots of *Nepeta leucophylla* and quantification of polyphenolic constituents by RP-HPLC-DAD. ***Food Measure.*** **10:** 658–669.
2. **Sharma A.** and Cannoo D. S. (2016) Effect of extraction solvents/techniques on polyphenolic contents and antioxidant potential of the aerial parts of *Nepeta leucophylla* and the analysis of their phytoconstituents using RP-HPLC-DAD and GC-MS. ***RSC Adv.*** **6:** 78151-78160.
3. **Sharma A.** and Cannoo D. S. (2017) A comparative study of effects of extraction solvents/techniques on percentage yield, polyphenolic composition and antioxidant potential of various extracts obtained from stems of *Nepeta leucophylla*: RP-HPLC-DAD assessment of its polyphenolic constituents. ***J. Food Biochem.*****41:**e12337-12348.
4. Patial P.K. **Sharma A.** Kaur I. and Cannoo D.S. (2019) Correlation study among the extraction techniques, phytochemicals, and antioxidant activity of *Nepeta spicata* aerial part. *Biocatalysis and Agricultural Biotechnology 20: 101275.*
5. Kaur M. **Sharma A,*** Bhardwaj P. Kaur H. Uppal S K (2020) Evaluation of physicochemical properties, nutraceuticals composition, antioxidant, antibacterial and antifungal potential of waste amla seed coat (*Phyllanthus emblica*, variety Neelam). *Food Measure*. 1-12.
6. Dugala N. S. Goindia G. S. and **Sharma A** (2020) Evaluation of physicochemical characteristics of Mahua (*Madhuca indica*) and Jatropha (*Jatropha curcas*) dual biodiesel blends with diesel. *Journal of King Saud University - Engineering Sciences*.**.**
7. **Sharma A.,*** Bhardwaj G., & Cannoo D. S. (2021). Antioxidant potential, GC/MS and Headspace GC/MS analysis of essential oils isolated from the roots, stems and aerial parts of *Nepeta leucophylla*. *Biocatalysis and Agricultural Biotechnology*, 101950.
8. Kumari N, Aulakh MK, Sareen S, **Sharma A**, Sohal HS, Verma M, Mehta SK, Mutreja V (2022) Greener Synthesis of Zirconium-Based Nanocatalyst for Transesterification. Topics in Catalysis. 2022, 65(19):1811-20.
9. Verma M, Thakur A, Kapil S, Sharma R, **Sharma A,** Bharti R (2022). Antibacterial and antioxidant assay of novel heteroaryl-substituted methane derivatives synthesized via ceric ammonium nitrate (CAN) catalyzed one-pot green approach. Molecular Diversity. 2022 :1-2.
10. Kaur H, Anand V, **Sharma A**, Verma M, Sareen S, Mehta SK, Mutreja V (2022) Mechanistic investigation of formation of highly-dispersed silver nanoparticles using sea buckthorn extract. Nanotechnology. 2022, 34(8): 085703.

11. Sehrawat S, Sandhu N, Anand V, Pandey SK, **Sharma A**, Yadav RK, Singh AP, Singh AP (2022) Study of 5-Bromo-2-thiophene carboxaldehyde derived novel Schiff base as a biologically active agent as well as X-ray crystallographic study of CS coupled benzothiazole. Journal of Molecular Structure. 2022, 1269:133782.
12. Kumari N, Aulakh MK, Anand V, Sareen S, Verma M, **Sharma A**, Kataria R, Mutreja V (2022) Visible-Light Driven Degradation of Tetracycline Hydrochloride Using Zirconia Nanoparticles as Photocatalysts. Topics in Catalysis. 2022, 65(19): 1938-50.
13. Kathuria D, Bhattu M, **Sharma A**, Sareen S, Verma M, Kumar S (2022) Catalytic Reduction of Water Contaminants Using Green Gold Nanoparticles Mediated by Stem Extract of Nepeta Leucophylla. Topics in Catalysis. 2022, 65(19): 1899-909.
14. **Sharma, A.,** Kathuria, D., Kolita, B., Gohain, A., Das, A. K., Bhardwaj, G., & Simal-Gandara, J. (2023). Greener approach for the isolation of oleanolic acid from Nepeta leucophylla Benth. Its derivatization and their molecular docking as antibacterial and antiviral agents. Heliyon, 9(8).
15. Thakur, A., Verma, M., Sharma, R., **Sharma, A.,** Gupta, A., & Sharma, V. (2023). Ultra-Sonicated One-Pot Synthesis of Potent Bioactive Biscoumarin and Polycyclic Pyranodichromenone Scaffolds in Aqueous Media: A Complementary Tool to Organic Synthesis. Synthesis.
16. Rogeboz, P, Latado, H, **Sharma, A,** Chaubey, N, Kadian, S, Chavez, E, Do, T.K.T, Dubois, M, Giuffrida, F, Patin, A. and Marin-Kuan, M (2024). Oil Adulteration Evaluation Using High Performance Thin Layer Chromatography. **Food Analytical Methods**, pp.1-12.
17. Verma, K., Kathuria, D., Ram, A., Sharma, S., Tohra, S. K., Verma, K., & **Sharma, A.** (2025) Evaluation of Cytotoxic and Antioxidant Potential of Green-Synthesized Silver and Gold Nanoparticles from Nepeta leucophylla Benth. *Chemistry & Biodiversity*, e202402679.

Review Papers

1. **Sharma A,*** Cooper R, Bhardwaj G. and Cannoo DS (2020) The Genus Nepeta: Traditional uses, Phytochemicals and Pharmacological Properties. *Journal of Ethnopharmacology*, 113679,
2. Bhardwaj, A., **Sharma, A.,*** Cooper, R., Bhardwaj, G., Gaba, J., Mutreja, V., & Chauhan, A (2021) A comprehensive phytochemical, ethnomedicinal, pharmacological ecology and conservation status of *Picrorhiza kurroa Royle ex Benth.*: An endangered Himalayan medicinal plant. *Process Biochemistry*, 2021.
3. Kaur, L., Malhi, D.S., Cooper, R., Kaur, M., Sohal, H.S., Mutreja, V. and **Sharma, A.,*** (2021). Comprehensive review on ethnobotanical uses, phytochemistry, biological potential and toxicology of *Parthenium hysterophorus L.*: A journey from noxious weed to a therapeutic medicinal plant. *Journal of Ethnopharmacology*, p.114525.
4. Yadav S, **Sharma A**, Nayik GA, Cooper R, Bhardwaj G, Sohal HS, Mutreja V, Kaur R, Areche FO, AlOudat M, Shaikh AM (2022) Review of Shikonin and Derivatives: Isolation, Chemistry, Biosynthesis, Pharmacology and Toxicology. *Frontiers in Pharmacology*. 2022, 13:905755.

5. Garg S, Sohal HS, Malhi DS, Kaur M, Singh K, **Sharma A,** Mutreja V, Thakur D, Kaur L (2022) Electrochemical Method: A Green Approach for the Synthesis of Organic Compounds. *Current Organic Chemistry.* 2022, 26(10):899-919.
6. Choudhary D, Garg S, Kaur M, Sohal HS, Malhi DS, Kaur L, Verma M, **Sharma A**, Mutreja V (2022) Advances in the Synthesis and Bio-Applications of Pyrazine Derivatives: A Review. *Polycyclic Aromatic Compounds*. 2022, 17:1-67
7. Aggarwal G, Kaur G, Bhardwaj G, Mutreja V, Sohal HS, Nayik GA, Bhardwaj A, **Sharma A*** (2022) Traditional Uses, Phytochemical Composition, Pharmacological Properties, and the Biodiscovery Potential of the Genus Cirsium. *Chemistry*. 2022, 4(4):1161-92.
8. Kumari N, Sareen S, Verma M, Sharma S**, Sharma A,** Sohal HS, Mehta SK, Park J, Mutreja V (2022) Zirconia-based nanomaterials: recent developments in synthesis and applications. *Nanoscale Advances*. 2022.
9. Kaur, H., Sareen, S., Verma, M., Vashisht, A., **Sharma, A.,** Kataria, R., Mehta, S.K., Park, J. and Mutreja, V., (2023). Effect of synthesis methods and conditions on properties and applications of carbon dots for the detection of potential water contaminants: a review. *Critical reviews in analytical chemistry*, *53*(4), 751-774.
10. Thakur, S., Kathuria, D., Bhardwaj, G., Kaur, R. & **Sharma, A.** (2025). Phytochemistry, Traditional Uses, Pharmacology, Nutritional Composition and Agrotechnology of Underutilized Wild Fruit Plant *Carissa carandas L. Chemistry & Biodiversity*.

Books

1. **Sharma, A.,** & Nayik, G. A. (Eds.). (2023). Immunity Boosting Medicinal Plants of the Western Himalayas. **Springer Nature.**
2. **Sharma, A.,** Bhardwaj, G., and Nayik, G.A. eds., (2023). *Phytochemistry and Nutritional Composition of Significant Wild Medicinal and Edible Mushrooms*. **Royal Society of Chemistry (RSC)**
3. **Sharma A,** Bhardwaj G and Nayik, G.A. eds., (2023). *Edible and Medicinal Mushrooms of the Himalayas: Climate Change, Critically Endangered Species and the Call for Sustainable Development*. Volume in: The Natural Products Chemistry of Global Plants Series by Taylor and Francis, CRC Press. **Taylor & Francis, CRC Press.**
4. Kathuria D, **Sharma A,** Verma M, Nayik GA eds., **(2024)** Bioprospecting of Natural Sources for Cosmeceuticals, **Royal Society of Chemistry (RSC)**
5. Das, A.K., **Sharma, A.,** Mutreja, V. Javed, M. and Bhardwaj, G., eds., 2024. Chemistry, Biology and Pharmacology of Lichen, **Wiley**.
6. Kathuria D, **Sharma A,** Gandara JS, Verma M**,** eds., **(2024)** Plant Based Secondary Metabolites as Potent Cosmaceuticals: Present and Future Perspectives, **Academic Press, Elsevier**

7. Kumar M, Kathuria D, **Sharma A,** eds., **(2024)** Natural Products Loaded Scaffold and their Applications in Tissue Engineering. **Springer Nature.**

Book Chapter Published

1. **Sharma A.*** Nayik G.A. and Cannoo D. S. (2019) Pharmacology and toxicology of *Nepeta cataria* (Catmint) species of genus *Nepeta*: A review. *Plant and Human Health*, Volume 3, Edited by **Hakeem**, Khalid Rehman, **Ozturk**, Munir, Springer International Publishing, pp 382.
2. **Sharma A.*** Bhardwaj P. Bhardwaj G. and Cannoo D. S. (2020) Medicinal Plants of the Trans-Himalayas (Chapter 3). *Natural Products of Silk Road Plants*. Edition 1, Edited by **Raymond Cooper and Jeffrey Deakin, CRC Press, Taylor & Francis,** pp 74-96.
3. **Sharma A.,*** Bhardwaj G., Gaba J., Cannoo D.S. (2020) Natural Antioxidants: Assays and Extraction Methods/Solvents Used for Their Isolation. In: Nayik G.A., Gull A. (eds) Antioxidants in Fruits: Properties and Health Benefits. Springer, Singapore.
4. Gaba J., Bhardwaj G., **Sharma A.** (2020) **Lemongrass.** In: Nayik G.A., Gull A. (eds) Antioxidants in Vegetables and Nuts - Properties and Health Benefits. Springer, Singapore. Pp 75-103.
5. Bhardwaj G, **Sharma A***, Gohain A, Sohal HS, Bhatia T, Mutreja V (2022) Extraction Techniques, Production and Economic Importance of Asafoetida Oleoresin. In Handbook of Oleoresins 2022 (pp. 101-128). CRC Press.
6. **Sharma A***, Bhardwaj G, Sohal HS, Gohain A (2022) Eugenol. In Nutraceuticals and Health Care 2022 Jan 1 (pp. 177-198). Academic Press.
7. Cooper R, **Sharma A** (2022) Select Global Immune-Boosting Plants Used in Folklore Medicine. InPlants and Phytomolecules for Immunomodulation 2022 (pp. 285-320). Springer, Singapore.
8. Kumar V, Ranjan N, Kumar R, **Sharma A,** Kathuria D (2023) A Case Study of 4D-Imaging-Assisted 4D Printing for an Efficient Drug-Delivery System for Veterinary Cancer Patients. In4D Imaging to 4D Printing 2023 (pp. 137-152). CRC Press.
9. **Sharma A.,*** Gumber, K**.,** Gohain A, Bhatia, T., Sohal H.S., Mutreja V. & Bhardwaj G., (2023) Importance of essential oils and current trends in use of essential oils (aroma therapy, agro-food, non-food uses and their economic importance). In: Nayik G.A., Ansari M.J. (eds) **"**Essential Oils: Extraction, Characterization, and Applications, (pp. 53-83) Elsevier
10. Thakur S, Bhardwaj G, Mutreja V, **Sharma A*** (2023) Trends and future perspectives in nanoencapsulation of plant-based polyphenolics (flavonoids, Anthocyanins, tannins). In: Kour, J., Ul Haq, R., Wani, S.A., Jyoti, B. Handbook of nutraceuitical, CRC Press, Taylor & Francis.
11. Bhardwaj, G., **Sharma, A.,** Thakur, S., Sareen, S., Sohal, H. S., Mutreja, V., & Sharma, A. (2023). Gentiana kurroo Royle: Himalayan Gentian. In Immunity Boosting Medicinal Plants of the Western Himalayas (pp. 187-204). Springer Nature Singapore.

12. Thakur, S., Mutreja, V., & **Sharma, A.*** (2023). Nanoparticles Function as Delivery Systems for Immune Potentiation. In Nanovaccinology: Clinical Application of Nanostructured Materials Research to Translational Medicine (pp. 193-211). Springer Nature Singapore.

Presentations and Short term training course

Total = 19; Poster Presentations = 11; Oral Presentations = 2 ; Participation = 2; Short term training course: 4

Peer reviewer

Project Reviewed

1. Invasion Biology, Ecology and Management of Parthenium Weed in Sultanate of Oman - Govt of Oman.
2. Geochemical characterization and origin of listwaenite (Oman Mountains) – a potential host for gold and platinum-group elements, and carbon sequestration - Govt of Oman.
3. Biochar-impregnated self-floating system based on Omanis date palm fiber and Arabic gum for solar steam generation and environmental applications - Govt of Oman.
4. Circular Economy of Sustainable Packaging Solutions in Oman's Food Industry: Cost Efficiency, Functional Preferences, and Willingness to Pay Assessment - Govt of Oman

Book Reviewed

1. Care and Cure From Prairie Greens - **Bentham Science Publisher**
2. Phytochemicals: Chemistry, Bioavailability and Therapeutic Properties – **Springer**
3. Bentham Briefs in Biomedicine and Pharmacotherapy'**-** Anthraquinones as Bioactive Multifaceted Therapeutic Agents, Volume 3 - **Bentham Science Publisher**

Journal Peer reviewer

1. ASC Omega
2. Biocatalysis and Agricultural Biotechnology
3. BMC Complementary Medicine and Therapies
4. Chemistry & biodiversity
5. Critical Reviews in Analytical Chemistry
6. Critical Reviews in Food Science and Nutrition
7. Food Chemistry
8. Journal of Agricultural and Food Chemistry
9. Journal of Food Biochemistry
10. Process biochemistry
11. Scientific Reports

References

1. **Joshua S. Sharp (Ph.D.),** Acting Associate Dean of Research and Triplett-Behrakis Endowed Professor of Pharmacology, School of Pharmacy. Director, Glycoscience Center of Research Excellence (GlyCORE), Associate Professor of Chemistry and Biochemistry, The University of Mississippi, MS 38677-1848, USA
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