

## Dr. Sunil Paul Mathew Menacherry, M.Sc, Ph.D

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## Education

2011 – 2016

### **Ph. D. in Chemistry (Environmental and Analytical Chemistry)**

*Mahatma Gandhi University, India.*

2006 – 2008

### **M. Sc. in Chemistry (Pharmaceutical Chemistry)**

*Mahatma Gandhi University, India.*

2003 – 2006

### **B. Sc. in Chemistry**

*Mahatma Gandhi University, India.*

## Professional Experience

Aug 2023 – Current

### **Scientific Assistant**

*(Umweltbundesamt - German Environment Agency, Germany)*

- Analysis of pharmaceuticals in aquatic environment.

Oct 2019 – June 2023

### **Postdoctoral Researcher**

*(Department of Soil Science and Soil Protection, Czech University of Life Sciences Prague, Czech Republic)*

- Research focusing the investigation of the behavior of organic pollutants (pharmaceuticals, pesticides etc.) in soil.

Sept 2015 – June 2019

### **Postdoctoral Researcher**

*(Division of Environmental Science and Engineering (DESE), Pohang University of Science and Technology (POSTECH), Republic of Korea)*

- Investigated the transformation of environmentally relevant chemical processes in ice phase. Examples include the dissolution of iron oxide in ice phase, which is largely affected by the presence of various environmentally important organic and inorganic ligands, pH etc.

May 2014 - April 2015

### **Visiting Student**

*(Division of Environmental Science and Engineering (DESE), Pohang University of Science and Technology (POSTECH), Republic of Korea)*

- Extensively studied the dissolution of Lead(IV) oxide in ice phase which is found to induce lead poisoning in the polar and other regions covered under snow/ice and thus receives extreme environmental relevance.

Sept 2008 - Oct 2009

### **Analyst**

*(Quality Evaluation laboratory, Spices Board, Govt. of India)*

- Responsibilities includes the analysis of various spices and spice products for different quality parameters.

## Research Interests

- Structural elucidation of metabolites/degradation products of organic pollutants.
- Characterization of isomeric compounds by Energy-Resolved Mass Spectrometry (ERMS).
- Advanced Oxidation Processes (AOPs) for the degradation of organic pollutants from water.
- Trace level detection of organic pollutants by tandem Mass Spectrometry.
- Metabolism of environmental pollutants in soil.

## Summary of Academic Achievements (Selected)

- Research articles published in SCI journals: **22** (First Author: **11**, Corresponding Author: **4**)
- Review articles published in SCI journals: **2**, Book chapters: **2**
- Google Scholar citation > **410**, H-index: **12** (updated on Aug. 01, 2023)
- Guest Editor of a special issue “**Novel Methods for the Remediation of Emerging Organic Pollutants from the Environment, Vol. II**” in *ChemEngineering* (ISSN 2305-7084); 2023
- Co-Guest Editor of a special issue “**Air Pollution from Wastewater Management**” in *Atmosphere* (ISSN 2073-4433); 2022
- Guest Editor of a special issue “**Novel Methods for the Remediation of Emerging Organic Pollutants from the Environment**” in *ChemEngineering* (ISSN 2305-7084); 2022
- Guest Editor of a special issue “**Analytical Methods to Monitor Emerging Organic Contaminants in the Environment**” in *Analytica* (ISSN 2673-4532); 2022
- Reviewer, *Catalysis Today* (Elsevier); 2016 –
- Reviewer, *Environmental Science and Pollution Research* (Springer); 2017 –
- Reviewer, *Environmental Monitoring and Assessment* (Springer); 2021 –
- Reviewer, *Catalysts* (MDPI); 2022 –
- Reviewer, *Nanomaterials* (MDPI); 2023 –
- Reviewer, *Sustainability* (MDPI); 2023 –
- Coordinator, Organizing Committee, *International Conference on Frontiers of Mass Spectrometry* (ICMS 2013), Kottayam, India
- Member, Local Organizing Committee, *Second International Conference on Membranes* (ICM-2013), Kottayam, India
- Member, Local Organizing Committee, *Second International Conference on Advanced Oxidation Processes* (AOP-2012), Kottayam, India
- Member, Local Organizing Committee, *International Conference on Membrane* (ICM-2011), Kottayam, India
- Member, Local Organizing Committee, *International Conference on Advanced Oxidation Processes* (AOP-2010), Kottayam, India
- Member, Local Organizing Committee, *International Conference on Climate Change and Developing Countries* (CCDC-2010), Kottayam, India

## Publications

### In Books

- 2 **Menacherry, S. P. M.**; Aravindakumar, C. T.; The Oxidative Degradation of Theophylline from Aquatic Environments: A Mechanistic Study. Book Chapter (Nova science publishers), 2023 (URL: <https://novapublishers.com/shop/advances-in-environmental-research-volume-96/>)
- 1 **Menacherry, S. P. M.**; Aravind, U. K.; Aravindakumar, C. T.; Transformation mechanism of organic CECs by photochemical oxidation processes: Insights from mass spectrometry. Book Chapter (RSC), 2023 (DOI: <https://doi.org/10.1039/9781839167355>)

### In International Journals

- 24 **Menacherry, S. P. M.**; Kodešová, K.; Fedorova, G.; Sadchenko, A.; Kočárek, M.; Klement, A.; Fér, M.; Chroňáková, A.; Nikodem, A.; Grabic, R.; Dissipation of twelve organic micropollutants in three different soils: Effect of soil characteristics and microbial composition. **J. Hazard. mater.** 2023 (DOI: <https://doi.org/10.1016/j.jhazmat.2023.132143>).
- 23 **Menacherry, S. P. M.**; Kodešová, K.; Švecová, H.; Klement, A.; Fér, M.; Nikodem, A.; Grabic, R.; Selective accumulation of pharmaceutical residues from 6 different soils by plants: A

- comparative study on onion, radish, and spinach. **Environ. Sci. & Pollut. Res.** 2023, 30, 54160–54176
- 22 Moorchilot, V. S.; Aravind, U. K.; **Menacherry, S. P. M.**; Aravindakumar, C. T.; Single-Particle Analysis of Atmospheric Aerosols: Applications of Raman Spectroscopy. **Atmosphere**, 2022, 13, 1779
- 21 Shibin, N. B.; **Menacherry, S. P. M.**; Sreekanth, R.; Nguyen, T. P.; Pramod, G.; Aravind, U. K.; Aravindakumar, C. T.; Exploring the oxidation chemistry of hydroxy naphthoic acid: An experimental and theoretical study. **J. Phys. Org. Chem.**, 2022 (DOI: <https://doi.org/10.1002/poc.4416>)
- 20 **Menacherry, S. P. M.**; Aravind, U. K.; Aravindakumar, C. T.; Critical review on the role of mass spectrometry in the AOP based degradation of contaminants of emerging concern (CECs) in water. **J. Environ. Chem. Eng.**, 2022, 10, 108155
- 19 **Menacherry, S. P. M.**; Aravind, U. K.; Aravindakumar, C. T.; Oxidative degradation of pharmaceutical waste, theophylline, from natural environment. **Atmosphere**, 2022, 13, 835
- 18 Sreekanth, R.; **Menacherry, S. P. M.**; Renjith, S.; Manojkumar, T.K.; Aravind, U. K.; Aravindakumar, C. T.; Oxidation reactions of carbaryl in aqueous solutions. **Chem. Phys.** 2021, 544, 111427
- 17 **Menacherry, S. P. M.**; Kočárek, M.; Kacerova, T.; Kotíková, T.; Kačer, P.; Kodešová, R.; The impact of initial concentration of selected pharmaceuticals on their early stage of dissipation in soils. **J. Soils Sediments**. 2021, 22, 522-535
- 16 Thomas, S.; Rayaroth, M. P.; **Menacherry, S. P. M.**; Aravind, U. K.; Aravindakumar, C. T.; Sonochemical degradation of benzenesulfonic acid in aqueous medium. **Chemosphere**, 2020, 10, 108155
- 15 **Menacherry, S. P. M.**; Min, D.W.; Daun, J.; Aravindakumar, C. T.; Lee, W.; Choi, W.; Halide-induced dissolution of lead(IV) oxide in frozen solution. **J. Hazard. Mater.** 2020, 384, 121298
- 14 Kim, K.; **Menacherry, S. P. M.**; Daun, J.; Saiz-Lopez, A.; Choi, W.; Simultaneous and synergic production of bioavailable iron and reactive iodine species in ice. **Environ. Sci. Technol.** 2019, 53, 7355-7362
- 13 Blaž, C.; Naglič, P.; **Menacherry, S. P. M.**; Pernuš, F.; Likar, B.; Poor optical stability of molecular dyes when used as absorbers in water-based tissue-simulating phantoms. **Proc. SPIE**, Vol. 10870, 2019 (doi: 10.1117/12.2506977)
- 12 **Menacherry, S. P. M.**; Kim, K.; Lee, W.; Choi, C. H.; Choi, W.; Ligand-specific dissolution of iron oxides in frozen solutions. **Environ. Sci. Technol.** 2018, 52, 13766-13773
- 11 **Menacherry, S. P. M.**; Nguyen, T. P.; Aravind, U. K.; Pramod, G.; Aravindakumar, C. T.; Exploring the mechanism of diphenylmethanol oxidation: A combined experimental and theoretical approach. **Chem. Phys.** 2018, 513, 201-208
- 10 Oturan, N.; Aravindakumar, C.T.; Olvera-Vargas, H.; **Menacherry, S. P. M.**; Oturan, M. A.; Electro-Fenton oxidation of para-aminosalicylic acid: degradation kinetics and mineralization pathway using Pt/carbon-felt and BDD/carbon-felt cells. **Environ. Sci. & Pollut. Res.** 2017, 24, 969-978
- 9 Sruthi, S. N.; Shylesh Chandran, M. S.; **Menacherry, S. P. M.**; Ramasamy, E. V.; Multiresidue analysis of organochlorine pesticides (OCPs) in soil samples of Kuttanad agro-ecosystem-a tropical wetland of peninsular India. **Environ. Sci. & Pollut. Res.** 2017, 24, 969–978

- 8 **Menacherry, S. P. M.;** Sreekanth, R.; Aravind, U. K.; Pramod, G.; Aravindakumar, C. T.; Transformation reactions of radicals from the oxidation of diphenhydramine: Pulse radiolysis and mass spectrometric studies. *ChemistrySelect*, 2016, 5, 924-933
- 7 **Menacherry, S. P. M.;** Laprévote, O.; Nguyen, T. P.; Aravind, U. K.; Pramod, G.; Aravindakumar, C. T.; Identification of position isomers by energy-resolved mass spectrometry. *J. Mass Spectrom.*, 2015, 50, 944–950
- 6 Pramod, G.; Swathy, V.; Luke, T. L.; **Menacherry, S. P. M.;** Aravindakumar, C. T.; Degradation of dyestuff pollutant sudan I using advanced oxidation process. *J. Water Resource Prot.*, 2014, 6, 1276-1283
- 5 **Menacherry, S. P. M.;** Aravind, U. K.; Saha, A.; Pramod, G.; Aravindakumar, C. T.; Hydroxyl radical induced oxidation of theophylline in water: A kinetic and mechanistic study. *Org. Biomol. Chem.* 2014, 12, 5611-5620
- 4 Olvera-Vargas, H.; Oturan, N.; Aravindakumar, C. T.; **Menacherry, S. P. M.;** Sharma, V. K.; Oturan, M. A.; Electro-oxidation of the dye azure B: Kinetics, mechanism, and by-products. *Environ. Sci. & Pollut. Res.* 2014, 21, 8379–8386
- 3 Sreekanth, R.; **Menacherry, S. P. M.;** Aravind, U. K.; Marignier, J. L.; Belloni, J.; Aravindakumar, C. T.; Oxidation reactions of hydroxy naphthoquinones: Mechanistic investigation by LC-Q-TOF-MS analysis. *International Journal of Radiation Biology*. 2014, 90, 495-502
- 2 Sreekanth, R.; Prasanthkumar, K. P.; **Menacherry, S. P. M.;** Aravind, U. K.; Aravindakumar, C. T.; Oxidation reactions of 1- and 2-naphthols: An experimental and theoretical study. *J. Phys. Chem. A*, 2013, 117, 11261–11270
- 1 **Menacherry, S. P. M.;** Aravind, U. K.; Pramod, G.; Aravindakumar, C. T., Oxidative degradation of fensulfothion by hydroxyl radical in aqueous medium. *Chemosphere* 2013, 91, 295-301

## Skills/Expertise

### Expertise in Instruments

- **Mass Spectrometry** (Single Quadrupole - Shimadzu, Triple Quadrupole/Q-Trap - Applied Biosystems; Q-TOF - Waters)
- **Chromatography** (HPLC - Shimadzu, Dionex, & Agilent; UPLC - Waters; IC - Dionex; GC - Perkin Elmer & Shimadzu)
- **Electron Accelerator** (Pulse Radiolysis)
- **Spectroscopy** (UV-Vis - Shimadzu, Perkin Elmer, & Agilent; Fluorescence - Perkin Elmer; ATR-FT-IR - Shimadzu)
- **Inductively Coupled Plasma–Optical Emission Spectrometer** (ICP-OES - Thermo)
- **Total Organic Carbon (TOC) Analyzer** (Thermo)
- **Atomic Absorption Spectrometer** (AAS - Perkin Elmer)

## Technical Expertise

- **OS:** Windows, Linux & Android
- **Programming:** JAVA
- **Software:** ACD Chem Sketch, ChemOffice ChemDraw, Microcal Origin, Microsoft Office, Adobe Photoshop, etc.

## Awards

- **Senior Research Fellowship (SRF)** from Council of Scientific and Industrial Research (CSIR), Govt. of India
- **Dr. Hari Mohan memorial award** for the best poster in Trombay Symposium on Radiation and Photochemistry (TSRP 2014) held on January 6-9, 2014, Mumbai, India.
- Selected as an “**International visiting student**” by Pohang University of Science and Technology (POSTECH), Pohang, Republic of Korea, for a period of one year (2014)

## Other Interests

- Android app development
- Linux and open source
- Photography, Photo-designing, Traveling, and Sports

## Personal Information

**Age:** 37 years; **Date of Birth:** April 23, 1986; **Gender:** Male;

**Marital Status:** Married; **Kids:** One

**Languages Known:** English, Malayalam, Hindi; **Nationality:** Indian

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## References

### Prof. C. T. Aravindakumar

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Mahatma Gandhi University, Kottayam, India.

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### Prof. Olivier Laprévote

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Université Paris Cité, Paris, France

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