

Kanchana Chandrakanthan

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Personal statement

An enthusiastic chemist and teaching professional committed to inspiring the next generation of scientists through innovative instruction and mentorship.

Educational qualifications

- **Ph.D. in Chemistry, School of Molecular Sciences, Arizona State University, Tempe, AZ** (2019 August – 2024 February).
GPA – 4.00
- **Graduate Chemist, College of Chemical Sciences, Institute of Chemistry Ceylon** (2014 January – 2018 January)

First Class Honors, GPA – 3.97
- **Bachelor of Science (Chemistry Special) University of Colombo, Sri Lanka** (2015 June – 2019 June)
- Secondary Education
Schools attended – Princeton International School, Sri Lanka
Sussex College, Sri Lanka

Teaching Experience

- **Assistant Teaching Professor, School of Molecular Sciences, Arizona State University** (August 2024 – to date)
CHM 302 Environmental Chemistry Online and icourse. Explores major environmental issues, problems, and solutions from analytical and chemistry perspectives.
CHM 114 General Chemistry for Engineers Chemical principles with emphasis toward engineering.
CHM 113 General Chemistry I Principles of Chemistry. Adapted to the needs of students in the physical, biological, and earth sciences.
CHM 116 General Chemistry II Continuation of CHM 113. Equilibrium theory, thermodynamics, kinetics, electrochemistry, nuclear chemistry, descriptive chemistry.

- **Graduate Teaching Assistant, Arizona State University**, Tempe, AZ for
CHM 302 Lecture Course Environmental Chemistry (Fall 2023 and Fall 2021),
CHM 303 Laboratory Course Environmental Chemistry (Spring 2023)
CHM 112 Laboratory Course General Chemistry Laboratory for Majors II (Spring 2021),
CHM 113 Laboratory Course Principles of Chemistry. Adapted to the needs of students in the physical, biological, and earth sciences. (Fall 2020 and Spring 2020),
CHM 117 Recitation Course General Chemistry for Chemistry and Biochemistry majors (Fall 2019),
- **Teaching Assistant, Institute of Chemistry Ceylon, Sri Lanka** (2018 January-2018 August)
 General Chemistry, Physical Chemistry and Inorganic Chemistry laboratory courses. Conducted tutorial sessions for undergraduate students, assisted the supervision of exams and seminar workshops conducted by the Institute
- **Teacher in Science at Sussex College**, Sri Lanka (2013 – 2014) for Grades 6-9.

Research Experience

Postdoctoral Research Scholar in Herckes/Fraser Lab (2024 March - 2024 July)

Research Projects Undertaken

Project Title: **Airborne microplastics in a suburban location in the Desert Southwest:**

Occurrence and Identification Challenges

Supervisor: Prof. Pierre Herckes

Project Title: **Spatial and temporal distribution of soil microplastics in Phoenix, including the surrounding areas of the Sonoran Desert**

Supervisor: Prof. Pierre Herckes

Project Title: **A method to distinguish soot and tire wear based on the thermal optical transmittance in Organic Carbon-Elemental Carbon (OC-EC) analyser**

Supervisor: Prof. Pierre Herckes

Project Title: **Monitoring microplastics in recreational surface waters: Temporal variation in the Salt River and occurrence in swimming pools**

Supervisor: Prof. Pierre Herckes

Project Title: **Wastewater Treatment Plants as Major Sources of Atmospheric PFAS and Microplastics.**

Supervisor: Prof. Pierre Herckes

Research Assistant in Herckes/Fraser Research Group, SMS, ASU (Spring 2024, Fall 2022, Spring 2022)

Undergraduate Project Title: Sorptive Removal of Rhodamine B dye from an aqueous solution using Douglas Fir Biochar

Supervisors: Dr. Sameera R. Gunethilake, Dr.M.N. Kaumal

Publications

Chandrakanthan, K., Fraser, M.P., Herckes, P., 2023. Airborne microplastics in a suburban location in the desert southwest: Occurrence and identification challenges. *Atmos Environ* 298, 119617. <https://doi.org/10.1016/j.atmosenv.2023.119617>

Chandrakanthan, K., Fraser, M.P., Herckes, P., 2024. Microplastics are ubiquitous and increasing in soil of a sprawling urban area, Phoenix (Arizona). *Science of The Total Environment* 906, 167617. <https://doi.org/10.1016/j.scitotenv.2023.167617>

Chandrakanthan, K.; Fraser, M. P.; Herckes, P. Recreational activities as a major source of microplastics in aquatic environments. *Water Emerg. Contam. Nanoplastics* 2024, 3, 20. <http://dx.doi.org/10.20517/wecn.2024.40>

Chandrakanthan, K., Fraser, M.P., Herckes, P., 2024. A method to distinguish soot and tire wear based on the thermal optical transmittance in organic carbon-elemental carbon (OC-EC) analyzer. (In preparation)

Takuma Maeda, Jerry Wang, Peyton Nisson, Claire Fraser, **Kanchana Chandrakanthan**, Oscar Cisneros, Haruka Maeda, Sara Bowen, Hirotaka Sato, Yusuke Nakano, Hiroki Sato, Andrew Ducruet, Michael Lawton, Matthew Fraser, Pierre Herckes, Ethan Winkler, and Tomoki Hashimoto. STROKE/2025/054940: Microplastic Exposure Worsens Acute Ischemic Stroke Outcomes (Submitted)

Patents

K. Chandrakanthan, M. Fraser, P. Herckes, Method to Identify and Quantify Tire Wear
Full US patent application filed #19/323,555 on 9/9/2025

Honors and Awards

- **2026 American Chemical Society (ACS) Community of Practice (CoP), a competitive, year-long program** supporting faculty at bachelor's degree institutions in implementing green chemistry principles into their courses.

Graduate School, Arizona State University

- **ASU Graduate and Professional Student Association (GPSA) Travel Grant**, for an Individual Travel Award for the ACS Spring 2024 Conference
- **2023-24 Graduate College Travel Award Q3** for the ACS Spring 2024 Conference
- **Distinguished Teaching Assistant award in 2023, Arizona State University**, School of Molecular Sciences, Tempe, AZ
- **Graduate College Q2 Travel Award 2022** for the 40th AAAR Annual Conference held in Raleigh, North Carolina
- **2021 CAP LTER** (Central Arizona-Phoenix Long-Term Ecological Research Program) **Summer Graduate Student Grant** supported by the **National Science Foundation** under grant nos. CAP IV (2): DEB-1832016, CAP III: DEB-1026865 and CAP II: DEB-0423704 (CAP-LTER)
- **Distinguished Teaching Assistant award in 2020, Arizona State University**, School of Molecular Sciences, Tempe, AZ

Undergraduate Education

- **Shireen Jayasuriya Gold Medalist – (Valedictorian)** for the best overall performance in all parts of the Graduateship Examination
- **First in the Dean's List (2014-2018)** at the Institute of Chemistry, Ceylon.
- **Royal Society of Chemistry (Sri Lankan Section) Award – 2017 for the Best performance at the Levels 3 & 4 (Theory)** of the Graduateship Examination
- **Prof. Leslie Gunathilake Award – 2017 for Overall Excellence in Organic Chemistry**
- **B.A. Jayasinghe Memorial Award – 2017 for the third best performance at Chemistry Practicals**
- **Institute of Chemistry President's Scholarship -2017** for the **Best overall performance at Levels 1,2 and 3 of the Graduateship Examination**
- **Junior and Senior years**
 - **Pincock Prize 2017- Best performance in Photo Chemistry**

- Ms.Careen Manel Abeywardana Memorial Prize-**2017 for the Best performance in Natural Products Chemistry**
 - Dharmachandra & Thamarasa Gunawardhana Memorial Prize- **2017 for the Best performance in Analytical Chemistry**
 - Mevan Pieris Prize - **2017 Best performance in Polymer Chemistry and Technology**
 - N.M.S. Hettigedara Family prize **2017 - Best Performance in Pharmaceutical and Medicinal Chemistry**
 - Lakshmi Award **2017- Best performance in Chemistry in Gem Minerals and Synthetic Gem Minerals**
 - Dharmarathne Wasala Prize - **2017 Best performance in Computational Chemistry**
 - E.G.Somapala prize - **2017 for Best performance in Food Chemistry and Technology**
 - Deepa Sotheeswaran Gaschik Prize **2017- Best performance in AgroChemicals**
 - K.G.Karunasena Memorial Prize **2017- Best performance in Quantum Mechanics**
- **Sophomore year**
 - **Professor W. Pearlyn D Pereira Commemoration Trust Scholarship 2016- Second Best Overall Performance**
 - **Professor. Samitha P. Deraniyagala Prize 2016 Best Performance in Inorganic Chemistry**
- **Freshman year**
 - **Nandawathie Jayaweera (Open) Memorial Scholarship for best overall performance 2015**
 - **College of the Chemical Sciences Prize for the Best performance in fundamentals of Physics for Chemists 2015**
 - **Emerine Fernando Memorial Prize for the Best performance in Principles of Physical Chemistry 2015**

- Prof. and Mrs. S. Sotheeswaran prize **Best performance in Principles of Organic Chemistry 2015**
- Somawathie Mathew Memorial Prize **Best Performance in Biology for Physical Science Students 2015**
- College of Chemical Science Prize **Best performance in Analog and Digital Electronics 2015**

Presentations and Conferences

- **Guest speaker presentation at ASU Prep Digital High School** on succeeding in chemistry courses at ASU, strategies for effective preparation, and potential career paths in the field of chemistry. April 22nd, **2025**.
- **Platform presentation at ACS (American Chemical Society) Spring 2024** Conference on March 17 – 21 in New Orleans, LA on **Microplastics are ubiquitous in an urban environment in Phoenix, AZ**.
- **Guest Talk on Plastics and Microplastics: An emerging environmental concern in CHM 302 Fall 2023** Lecture course at Arizona State University
- **Poster presentation at the 25th Annual Central Arizona-Phoenix Long-Term Ecological Research Program All Scientists Meeting and Poster Symposium** held on January 13th, **2023** at ASU Skysong on **Spatial and temporal distribution of soil microplastics in Phoenix, including the surrounding areas of the Sonoran Desert**. Kanchana Chandrakanthan, Pierre Herckes, Arizona State University
- **Platform presentation at AAAR 40th Annual Conference** held in Raleigh, North Carolina on **Airborne Microplastics in a Suburban Location in the Desert Southwest**. Kanchana Chandrakanthan, Pierre Herckes, Arizona State University, October 3rd -7th, **2022**.
- **Poster presentation at the 24th Annual Central Arizona-Phoenix Long-Term Ecological Research Program All Scientists Meeting and Poster Symposium** held on March 25th **2022** at ASU Skysong on **Spatial and temporal distribution of soil microplastics in Phoenix, including the surrounding areas of the Sonoran Desert**. Kanchana Chandrakanthan, Pierre Herckes, Arizona State University
- **Guest Talk on Plastics pollution and Microplastics at ASU Prep Digital High School** March 3rd, **2022**.
- **A talk on Plastics pollution, microplastics and their occurrence in CHM 302 Fall 2021** Lecture course at Arizona State University

- **Poster presentation at AAAR 39th Annual Conference** held in Albuquerque, New Mexico on **Airborne Microplastics in a Suburban Location in the Desert Southwest**. Kanchana Chandrakanthan, Pierre Herckes, Arizona State University, October 18th-22nd, 2021.
- **Presentation on the Distribution and occurrence of airborne microplastics in Tempe, AZ to Maricopa County Air Quality Department (MCAQD)** June 29th 2021

Interviews and News coverage of research

- 2024 New ASU research shows swimwear is a surprising source of microplastics
ASU press release NPR-KJZZ segment/interview. <https://www.kjzz.org/science/2024-10-04/new-asu-study-links-microplastic-pollution-to-swimwear>
- 2024 ASU Study Reveals Swimsuits as Major Source of Microplastic Pollution.
<https://www.onegreenplanet.org/environment/asu-study-reveals-swimsuits-as-major-source-of-microplastic-pollution/>
- 2024 New ASU Research Shows Swimwear is a Surprising Source of Microplastics
<https://www.aau.edu/research-scholarship/featured-research-topics/new-asu-research-shows-swimwear-surprising-source>
- 2024 Microplastics in the Desert: A Growing Concern in Phoenix Soils
Article in Spectroscopy on our work on microplastics in local soils.
<https://www.spectroscopyonline.com/view/microplastics-in-the-desert-a-growing-concern-in-phoenix-soils>
- 2024 New ASU research shows swimwear is a surprising source of microplastics.
<https://news.asu.edu/20240927-environment-and-sustainability-new-asu-research-shows-swimwear-surprising-source>
- 2023 News article on research findings from Spatiotemporal distribution of soil microplastics in the Desert Southwest <https://news.asu.edu/20231027-discoveries-hidden-threat-lurking-phoenix-soil>
- 2023 Interview on 12News on Microplastics in the terrestrial environment
<https://www.12news.com/article/news/local/valley/arizona-researchers-finding-higher-concentrations-of-microplastics-in-the-valley/75-240fba9d-1b94-4e38-8927-de4cf1318754>

- 2021 Overview of research in the Fraser/Herckes Research group at the School of Molecular Sciences, Arizona State University.

<https://www.youtube.com/watch?v=VXPRI6Yobu8>

Service and Extracurricular Activities

- **Member of the College of Liberal Arts and Sciences' Standing Committee on the Quality of Instruction, Arizona State University. (Fall 2025- Spring 2028).**
- **Committee Member of Review of Teaching Assistants and Instructors, School of Molecular Sciences, Arizona State University (August 2021- to date).**
- **Faculty Advisor for the student-led club: American Medical Women's Association (AMWA), Arizona State University**
- **Peer Reviewer for manuscripts** in Atmospheric Environment, Environmental Monitoring and Assessment, Atmospheric Pollution Research, NANO Life, Science of the Total Environment.
- **Member of the search committee for the faculty position: Assistant Teaching Professor in General Chemistry at Arizona State University (Spring 2025)**
- **Institutional Partner member of AWIS (Association for Women in Science)**
- **Associate member of the Institute of Chemistry, Ceylon (Membership No:2688A)**
- **Steering Committee Member of the Alumni Association of College of Chemical Sciences, Institute of Chemistry Ceylon**
- **Awarded Distinction in Associated Board of the Royal Schools of Music (ABRSM) Western Music Theory and Practical (Piano) Musicianship, Grades 1–5**
- **Stall In-Charge of the Toxicology and Narcotics Stall at Chemex 4, Educational Exhibition and trade fair organized by the College of Chemical Sciences – 2017**
- **Member of the Sussex College Netball Team; winners of the District Championships in the Inter-District Netball Tournament over multiple years**
- **Member of the Sussex College Western Music Band**
- **Awarded the Best Student of the Year Sussex College, Sri Lanka – 2009 and 2010.**
- **Appointed Senior Prefect and subsequently Head Prefect, Sussex College, Sri Lanka.**
- **Represented Sri Lanka as an Accordion Solo performer at the Cultural Festival - 2008, Kuala Lumpur, Malaysia**

- Awarded **Certificate of Honors at the Examinations conducted by Colombo Academy of Language Skills and Dramatic Art** – 2005, 2006, 2007, 2008