

# Kanchana Chandrakanthan

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## Personal statement

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

## Educational qualifications

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- **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

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- **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.

- **Mentoring:** Second Committee Member, Barrett Honors Thesis, Barrett, The Honors College, Arizona State University. Student: Sofia Sande. Thesis: “The Use of Music Therapy to Influence Neural Plasticity Mechanisms Underlying Symptom Reduction in Children with Autism Spectrum Disorder.”
- **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

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**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)

## Publications

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**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

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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**

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- **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**

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- **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 22<sup>nd</sup>, **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 25<sup>th</sup>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 3<sup>rd</sup> -7<sup>th</sup>, **2022.**
- **Poster presentation at the 24<sup>th</sup>Annual Central Arizona-Phoenix Long-Term Ecological Research Program All Scientists Meeting and Poster Symposium** held on March 25<sup>th</sup> **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 3<sup>rd</sup>, **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 Chandranthan, Pierre Herckes, Arizona State University, October 18<sup>th</sup>-22<sup>nd</sup>, 2021.
- **Presentation on the Distribution and occurrence of airborne microplastics in Tempe, AZ to Maricopa County Air Quality Department (MCAQD)** June 29<sup>th</sup> 2021

### Interviews and News coverage of research

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- 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

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- **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 Accordian 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**