

ESHANI HETTIARACHCHI, Ph.D.

Education

- **Ph.D. in Chemistry – 2020**
With a focus on Atmospheric & Environmental Chemistry at New Mexico Institute of Mining and Technology (NMT), USA
Ph.D. Advisor: Dr. Gayan Rubasinghege
"Dissertation Title: Study of Heterogeneous Chemistry & Photochemistry of Atmospheric Aerosols: Impact of Mineralogy on Ocean Fertilization, Human Health and the Greenhouse Gas Mitigation"
- **B.Sc. Special Degree in Chemistry – 2015**
With minors in Geology and Molecular Biology & Biochemistry at University of Peradeniya, Sri Lanka
- **BTECH Computer Science (Sp. Multimedia & Graphics Designing) - 2011**
Joint Diploma from IDM Affiliated University College, Kuliyaipitiya, Sri Lanka, and Edexcel UK, UK

Skills

Problem Solving | Team Player | Effective Communication | Mentoring Students

Skilled user of multiple spectroscopic and imaging techniques

Fourier Transform IR Spectroscopy (FTIR - ATR, Transmission), High Resolution Mass Spectroscopy (HRMS), Gas Chromatography Mass Spectroscopy (GCMS), UV-VIS Spectroscopy, Fluorescence Spectroscopy (FS), Inductively Coupled Plasma – Mass Spectroscopy (ICP-MS), NMR Spectroscopy, Atomic Absorption Spectroscopy (AAS), Cyclic Voltammetry (CV), Vibrating Sample Magnetometry (VSM), Thermogravimetric analysis (TGA), Microscopic Techniques (SEM, TEM, LM), X-Ray Diffraction Analysis (XRD), Total Organic Carbon Analyzer (TOC), Surface Area Analyzer (BET), Working with Vacuum Systems and Solar Simulators

Skilled at handling software and computational chemistry packages

Matlab, Python, ShareLaTech, MiniTab, Avogadro, PHREEQC, Geochemist's Workbench, Spartan ImageJ, Origin, Kgraph, Essential FTIR, ProcessEye, SpectraMagic NX, Diamond QGIS, Adobe Package & MS Office

Skilled at technical writing and effective communication

- Eleven peer-reviewed research articles and 3 science-magazine articles and counting – *see next page*
- Multiple invited conference presentations – *see next page*
- Serving as a journal review board member for MDPI and reviewer for ACS and Elsevier
- First place – 3 minutes speech competition – 2019 NMT Research Symposium – *see page 3 for full award list*
- Creating Science videos and designing science boardgames through UC San Diego

Experience

- Postdoctoral Scholar, Department of Chemistry & Biochemistry, University of California, San Diego – Since **2020**
- Graduate Teaching Assistant and Research Assistant; New Mexico Tech – **2016 – 2020**
- Temporary Academic Staff; Dept. of Chemistry, University of Peradeniya – **2015**
- Intern Chemist; Hemas Manufacturing, Sri Lanka – **2014**
- Freelancing (Slide Designing) at fiverr.com – **2014/2015**



[Website](#)



[Google Scholar](#)

Interests



Outdoor
Nature is my escape



Reading
Non-fiction fan here



Painting
I love playing with colors



Volunteering
Committed to make small changes everyday



Learning
Always eager to widen my skillset

Contact Details

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Peer-
Reviewed
Articles

- Rose, A.N.; **Hettiarachchi, E.**; Grassian, V.H.; Monoethanolamine Adsorption on Oxide Surfaces. *J. Colloid Interface Sci.* **2022**. <http://doi.org/10.1016/j.jcis.2022.01.059>
- Hettiarachchi, E.**; Ivanov, S.; Kieft, T.; Goldstein, H. L.; Moskowitz, B. M.; Reynolds, R. L.; Rubasinghege, G. Atmospheric Processing of Iron-Bearing Mineral Dust Aerosol and Its Effect on Growth of a Marine Diatom, *Cyclotella meneghiniana*. *Environ. Sci. Technol.* **2021**, 55 (2), 871–881. <https://doi.org/10.1021/acs.est.0c06995>
- Thapa, S.; Meng, L.; **Hettiarachchi, E.**; Bader, Y. K.; Dickie, D. A.; Rubasinghege, G.; Ivanov, S. A.; Vreeland, E. C.; Qin, Y. Charge-Separated and Lewis Paired Metal-Organic Framework for Anion Exchange and CO₂ Chemical Fixation. *Chem. - A Eur. J.* **2020**. <https://doi.org/10.1002/chem.202002823>
- Hettiarachchi, E.**; Rubasinghege, G. Mechanistic Study on Iron Solubility in Atmospheric Mineral Dust Aerosol: Roles of Titanium, Dissolved Oxygen, and Solar Flux in Solutions Containing Different Acid Anions. *ACS Earth Sp. Chem.* **2020**. <https://doi.org/10.1021/acsearthspacechem.9b00280>
- Hettiarachchi, E.**; Reynolds, R. L.; Goldstein, H. L.; Moskowitz, B.; Rubasinghege, G. Bioavailable iron production in airborne mineral dust: Controls by chemical composition and solar flux *Atmos. Environ.* **2019**, 205, 90-102. <http://doi.org/10.1016/j.atmosenv.2019.02.037>
- Hettiarachchi, E.**; Paul, S.; Cadol, D.; Frey, B.; Rubasinghege, G. Mineralogy Controlled Dissolution of Uranium from Airborne Dust in Simulated Lung Fluids (SLFs) and Possible Health Implications. *Environ. Sci. Technol. Lett.* **2018**. <https://doi.org/10.1021/acs.estlett.8b00557>
- Thapa, S.; **Hettiarachchi, E.**; Dickie, D. A.; Rubasinghege, G.; Qin, Y.; Li, R. A Charge-Separated Diamondoid Metal-Organic Framework. *Chemcomm. Communication.* **2018**, 54, 12654. <https://doi.org/10.1039/c8cc07098a>
- Hettiarachchi, E.**; Reynolds, R. L.; Goldstein, H. L.; Moskowitz, B.; Rubasinghege, G. Iron Dissolution and Speciation in Atmospheric Mineral Dust: Metal-Metal Synergistic and Antagonistic Effects. *Atmos. Environ.* **2018**, 187, 417–423. <http://doi.org/10.1016/j.atmosenv.2018.06.010>
- Hettiarachchi, E.**; Hurab, O.; Rubasinghege, G. Atmospheric Processing and Iron Mobilization of Ilmenite: Iron-Containing Ternary Oxide in Mineral Dust Aerosol. *J. phy. Chem. A* **2018**, 122 (5), 1291–1302. <http://doi.org/10.1021/acs.jpca.7b11320>
- Hettiarachchi, E.**; Kottegoda, N.; Chandani Perera, A. Activated Coconut Coir for Removal of Water Hardness. *Desalin. Water Treat.* **2017**, 66, 103–110. <http://doi.org/10.5004/dwt.2016.0339>
- Hettiarachchi, E.**; Perera, R.; Chandani Perera, A. D. L.; Kottegoda, N. Activated Coconut Coir for Removal of Sodium and Magnesium Ions from Saline Water. *Desalin. Water Treat.* **2016**. <http://doi.org/10.1080/19443994.2015.1129649>

In Preparation

- Hettiarachchi, E.**; Grassian, V.H. Heterogeneous Reactions of Alpha-Pinene on Mineral Surfaces: Formation of Organonitrates and Oxidation Products– **2022, In Preparation**
- Hettiarachchi, E.**; Das, M.; Cadol, D.; Frey, B. Rubasinghege, G. Fate of Inhaled Uranium-containing Particles upon Clearance to Gastro-Intestinal Tract – *ES&T*, **2022, Under Review**
- Hettiarachchi, E.**; Das, M.; Ivanov, S.; Rubasinghege, G. Novel Method Development for Synthesis of Nano-Ilmenite. – *ACS Inorg. Chem.* **2022 In Preparation**

Science-
Magazine
Articles

- Hettiarachchi, E.**; Mineralogy Controlled Leaching of Inhaled Uranium and Health Implications, *Geo Health Newsletter*, Geological Society of America, **2020**
- Hettiarachchi, E.**; Coconut Coir for Domestic Desalination. *ALEMBIC Magazine*, University of Peradeniya. **2017**
- Hettiarachchi, E.**; Biosensors and Applications. *ALEMBIC Magazine*, University of Peradeniya. **2015**

Selected
Conferences

- Fate of Inhaled Uranium Cleared to the Gastrointestinal Tract – GSA Connects Online Annual Meeting - **2021**
- Uranium Inhalation and Health Implications – GSA Connects online Annual Meeting – **2020 – followed by a panel discussion (Invited)**
- Mineralogy Controlled Chemical Toxicity of Inhaled Uranium – GSA Rocky Mountain Meeting – **2019 (Invited)**
- Mineralogy Dependent Fe Solubility and Impact on the Growth of Ocean Algae – ACS Fall Meeting – **2019**
- Synthesis of Nano-Ilmenite and Study as an Fe Source on Atmospheric Fe Solubility & Growth of Marine Diatom – CINT Triannual User Meeting – **2019**
- Metal Organic Frameworks to Mitigate the Greenhouse Gas Mitigation – New Mexico Tech Student Research Symposium (SRS) – **2019**
- Airborne Uranium Dissolution in Simulated Lung Fluids – ACS Fall Meeting – **2018**
- Mineralogy Controlled Uranium Solubility in Simulated Lung Fluids – GSA Rocky Mountain Meeting – **2018**
- How Inhaled Uranium can become Toxic? - NM – Academy Science Award Symposium - **2018**
- Mineralogy Dependent Dissolution of Atmospheric Fe – AGU Fall Meeting – **2017**

Awards & Honors (In the USA only)

- **Greenlab GOLD Certificate** – Worked as the Greenlab contact person and improved the Grassian Lab to Gold level – **2021**
- **The NMT Founders Award** – “A Founders’ Award was created to honor the persons responsible for establishing the New Mexico School of Mines in Socorro in 1889, especially J. J. Baca and Ethan Eaton. The award is presented to the recipient of an advanced degree who has made an outstanding contribution to Tech through scholarship, research, and involvement in campus affairs.” – **2020**
- **Award for Graduate Research Excellence**, Dept. of Chemistry, New Mexico Tech – **2020**
- A Featured Student Researcher of NMT Graduate School Program 2020 – **2020**
- **The Langmuir Award** – “The Langmuir Award for Excellence in Research is given for an outstanding scientific research paper by any student or graduate of New Mexico Tech. The award is named in honor of Irving Langmuir (Nobel Laureate, 1932) who conducted extensive research with Tech staff” – **2019**
- **1st place in the 3 mins Speech Competition** at NMT Student Research Symposium – **2019**
- **Outstanding Graduate Teaching Assistant Award**, Dept. of Chemistry, New Mexico Tech – **2017**

Travel Grants

- NMT – Travel Grants from the Office of Students University Relations – **2019**
- NMT – Travel Grants from the Office of Research – **2018 & 2019**
- NIH/ACS Student Travel Award – **2018**
- NMT-GSA Travel Awards – **2017, 2018 & 2019**

Volunteer Work Highlights

While at UCSD:

- Actively work as the **Greenlab contact person** for the Grassian Research Group (2021 – present)
- Marketing and Communication Co-Vice Chair (2021-present) and a volunteer for the UCSD **Postdoctoral Association** Career Symposium Organizing Committee 2021
- **Tabletop science game designer** of UCSD Game designing group – *check my website if you are interested*
- Moderator for the SRC (Summer Research Conference at UCSD) in 2020 & 2021
- An **academic judge** for ACS-SA Undergraduate Research Symposium 2021, UC LEADS Research Symposium, 2022
- **Environmental Chemistry judge** for Eastern US Younger Chemist Committee Virtual Research Symposium, 2021
- Volunteer discussion leader for UCSD – **English in Action (EIA)** a program catered toward helping incoming international students improve their English language skills, 2021 – 2022
- Volunteer at **SCOPE Science outreach program**
- Have served as a hiring committee member for UCSD EH&S, for EH&S specialist position
- Volunteer as the **Environmental Science group coordinator** for US – Sri Lanka Academic and Research Collaboration Network, the largest body of US based scholars of Sri Lankan Diaspora. The twelve groups of the body work toward strengthening US – Sri Lanka scholastic relationships

While at NMT:

- Volunteer for the **Website Task Force of AAUW Socorro** chapter (Content Editor)
- Volunteered at **AAUW Tech Trek** in 2018 & 2019, **ACS Chemistry Week** Events at NMT, Chemistry Outreach Activities, NM Science Fiesta, as a **Judge for NM Science Fair, Event Supervisor for NM Science Olympiad, Discussion Leader** at ACS – Fall Meeting 2019 Graduate School Experience Workshop, and at Community Events organized by Keep **New Mexico True**.
- Volunteered as a **Travel Grants Reviewer** for GSA Travel Grants from 2016 – 2019 and other GSA sponsored events (Annual Thanksgiving Dinner, Graduate Student Symposium, 49ers Float, BBQ events).
- Through Caving club, have **helped BLM (Bureau of Land Management) in surveying new caves, restoration of caves, and cave trail markings** within New Mexico.
- Actively involved in New Mexico Tech International Office & Auxiliary Services Office organized **COVID-19 relief programs** such as food drives, fundraisers, and relocating on-campus dormitory students to apartments, working with graduate collage as a student tester for various needs that arose due to the COVID-19 closures, and involved in Socorro, NM community COVID-19 relief programs that supported the most affected Socorro families from the COVID-19 pandemic.

LoR from:

Gayan Rubasinghege, Ph.D., *Department of Chemistry, New Mexico Institute of Mining and Technology* – gayan.rubasinghege@nmt.edu, Ph.D. Research and Academic Advisor

Richard Reynolds, Ph.D., *US Geological Survey, Denver, CO* reynolds331@comcast.net, rreynolds@usgs.gov

Vicki H. Grassian, Ph.D., *Department of Chemistry and Biochemistry, University of California San Diego, La Jolla, CA* vhgrassian@ucsd.edu

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