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STAFF RESEARCH SCIENTIST and LAB MANAGER at UC SAN DIEGO

SUMMARY

Ph.D. Analytical chemist with 10+ years of experience over 16+ peer reviewed first-author publications in advanced instrumentation, method development, validation, and trace analysis across environmental, materials, and biologic systems. Demonstrated expertise in [high resolution mass spectrometry coupled with chromatography, advanced spectroscopy, microscopy, materials characterization, and standardized methods](#) (USP/EP, e.g., Karl Fischer, EPA, ASTM). Proven ability [to leverage diverse analytical and computational tools to solve complex scientific problems](#). Extensive experience in optimizing workflows, supporting R&D, and ensuring regulatory-compliant lab operations with zero safety incidents, and maximized research productivity.

CORE SKILLS

Leadership and Operations • Multi-user laboratory management • Safety compliance • SOP development • Budgeting & procurement • Vendor management • Personnel onboarding and training • Multi-project leadership and management • Regulatory compliance (QA/QC)

Analytical & Technical Expertise

- **Mass spectrometry and chromatography:** High resolution mass spectrometry ([HRMS/MS](#)), ultra high-performance liquid chromatography ([U-HPLC-MS](#)), gas chromatography ([GC-MS](#)), Inductively coupled plasma mass spectrometry ([ICP-MS](#), [ICP-OES](#))
- **Advanced spectroscopy:** temperature controlled attenuated total reflection ([ATR](#)) & transmission-[FTIR](#), [Raman](#), [UV-vis](#), Circular Dichroism ([CD](#)), Infrared reflectance absorption spectroscopy ([IRRAS](#)), photothermal infrared ([PTIR](#)) spectroscopy, atomic absorption spectroscopy ([AAS](#))
- **Microscopy and materials characterization:** Scanning electron microscopy ([SEM-EDX](#)), transmission electron microscopy ([TEM](#)), Atomic force microscopy ([AFM-IR](#), [hyperspectral mapping](#), [nanoindentation of nanoparticles and thin films](#), [elastic modulus](#), [Force curve microscopy](#)), X-ray diffraction analysis ([XRD](#)), Surface area analysis ([BET-SAA](#)), thermogravimetric analysis ([TGA](#)), Langmuir trough, Carbon capture with MOFs
- **Computational tools:** Python, PHREEQC
Method development, troubleshooting, optimization

Scientific & Business Impact • Proposal & grants development • Data-driven decision making • Mentorship and training • Communication and cross-functional scientific advising

EDUCATION

- **Postdoctoral Scholar** – UC San Diego, USA (2020 – 2023)
- **Ph.D. Chemistry** – New Mexico Tech, USA (2016 - 2020)
- **B.Sc. Chemistry with minors in Geology and Molecular Biology** – University of Peradeniya, Sri Lanka (2015)

EXPERIENCE

Staff Research Scientist and Lab Manager – UC San Diego (2023 – Present)

- Developed and optimized **HRMS/MS, U-HPLC-MS, FTIR**, and **AFM workflows**; integrated **Python scripts**, improving detection sensitivity of small organics (terpenes, alkaloids) and biomolecules (DNA, oligomers, and proteins).
- Developed and optimized **AFM-PTIR, O-PTIR Raman**, and **AFM-Force curve microscopy** workflows to mechanically and chemically characterize range of hard-materials for industry collaborators, e.g., Inter-molecular forces between nanomaterials, nanoindentation derived hardness

of submicron particles, chemical mapping. *Publication pending for first-in its type AFM workflow development*

- Generated analytical datasets that **directly supported 4 grant renewals and new funding awards and 4 peer-reviewed publications and 3 project handoffs to junior scientists.**
- Supervised daily operations of **multi-user lab (15+ researchers)**, achieving **zero safety incidents** and sustaining UCSD Gold Green Lab certification.

Postdoctoral Scholar – UC San Diego (2020 – 2023)

- Designed and executed trace analysis of gas-surface interactions with **HRMS/MS, U-HPLC-MS, and FTIR** leading to **4 peer-reviewed publications** resulting in **2 successful grant renewals and 1 project handoff to junior scientists.**
- Authored SOPs that streamlined instrument training and **reduced onboarding time for new researchers significantly (over 50%).**
- Led EH&S compliance as Area Safety Coordinator, ensuring full adherence to UCSD standards and **reducing audit preparation time by almost 90%.**

Graduate Research and Teaching Assistant – New Mexico Tech (2016 – 2020)

- Conducted **ICP-MS, FTIR, SEM-EDX, TEM, and XRD** analysis to characterize dust, mineral, heavy metals, and metal organic frameworks (MOF) materials and their reactivity for environmental and CO₂ capture studies; integrated with **Python programs** for sensitivity analyses.
- Familiarity with following and adopting EPA and ASTM methods.
- Developed computational workflows (**PHREEQC**) to interpret geo-bio-chemical behavior in human body, improving predictive accuracy of lab-to-field results relating to human health implications.

Intern Chemist, Hemas Manufacturing, Sri Lanka (2014)

- Gained industrial chemistry experience in a manufacturing environment

CERTIFICATIONS:

- Essentials of Entrepreneurship, Innovation, and Design – UC San Diego Extension Studies (2026)
- Lean and Six Sigma Black Belt Fundamentals – UC San Diego / PMI (2024)
- microMBA – Rady School of Management, UC San Diego (2024)
- Analytics Literacy for Business Professionals – UC San Diego (2023)

SELECTED AWARDS AND PUBLICATIONS

- Sigma Xi: The Scientific Research Honor Society **Full Member** - 2026
- ACS Geochemistry Division **Early Career Award** 2025
- Recipient of 12 additional research, teaching and leadership awards in the US
- 22+ peer-reviewed research articles (**16+ first-authored**)
- 19+ scientific presentations at major conferences and seminars (often as oral or featured speaker)
- Recent highlight: **Hettiarachchi, E.; Grassian V. H.; Cation-Assisted Surfactant Templating of DNA at the Air–Water Interface: New Insights into Nucleic Acid Surface Activity – JPC Letters, 2026.**
- **Google Scholar:** <https://scholar.google.com/citations?user=OEf40NQAAAAJ&hl=en&oi=ao>

LEADERSHIP & PROFESSIONAL SERVICE

Professional Service:

- Peer-reviewer for MDPI, AGU, EGU, RSC, ACS, and Elsevier journals. (2018 – Present)
- Science advising and chemistry consulting (2025 – Present)
- Co-Host, iScholar Dive podcast (2023 – Present)

Community Engagement:

- Language mentor, UCSD English in Action (EIA) – 6 mentees over the years (2021 – Present)