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STAFF RESEARCH SCIENTIST and LAB MANAGER at UC SAN DIEGO

SUMMARY

Ph.D. Analytical chemist with 10+ years of experience in method development, validation, and trace analysis across environmental, materials, and biologic systems. Demonstrated expertise in high resolution mass spectrometry coupled with chromatography, 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, cGMP in progress)

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/FM), X-ray diffraction analysis (XRD), Surface area analysis (BET-SAA), thermogravimetric analysis (TGA)
- **Computational tools:** Python, PHREEQC | Method development, troubleshooting, optimization
- **Classical and Compendial Methods:** Karl Fischer titration, TOC, pH, EPA, ASTM

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

EDUCATION

- **Ph.D. Chemistry** – New Mexico Tech, USA (2020)
- **B.Sc. Chemistry with double 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.
- Generated analytical datasets that **directly supported 3 grant renewals and new funding awards** and **2 peer-reviewed publications** and **2 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:

- 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

- ACS Geochemistry Division **Early Career Award** 2025
- Recipient of 12 additional research, teaching and leadership awards in the US
- 21 peer-reviewed research articles (**15 first-authored**)
- 18 scientific presentations at major conferences and seminars (often as oral or featured speaker)
- Recent highlight: **Hettiarachchi, E.; Grassian V. H.; pH-dependent surface interactions and structural changes for DNA adsorbed on TiO₂ particle surfaces have implications for environmental DNA** – *Cell Reports Physical Science*, 2025.
- **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 and technical writing advisor for multiple clients (2020 – Present)
- Co-Host, iScholar Dive podcast (2023 – Present)

Community Engagement:

- Outdoor volunteer, San Diego Ranger Districts (2025 – Present)
- Language mentor, UCSD English in Action (EIA) (2021 – Present)