

# Raj Mahat

## **Associate Principal Scientist- MilliporeSigma**

Laramie, WY 82070

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Analytical/bioanalytical chemist with formal training, extensive hands-on experience, and strong fundamental background in Mass Spectrometry. I have garnered extensive mass spectrometry based research and work experiences in the areas of Metabolomics/Lipidomics, Pharmaceuticals, and Environmental Chemistry. 5 years of experience working in life science industry (GLP) developing and validation analytical methods to analyze pharma and other molecules. Currently, as an Associate Principal Scientist in MilliporeSigma, I serve as a subject matter expert (SME) in Mass Spectrometry. Method/assay development and validation, experimental design, process improvement, cross-functional collaboration and technical writing are a part of my day-to-day job.

Willing to relocate: Anywhere

Authorized to work in the US for any employer

## Work Experience

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### **Senior Scientist (Associate Principal Scientist as of Aug 2021)**

MilliporeSigma-Laramie, WY

August 2017 to Present

- SME (subject matter expert) in separation science/chromatography and mass spectrometry
- On-site resource person in chemistry
- Design experiments and develop and validate chromatography and mass spectrometry based methods [GC, GC-MS, GC-MS/MS, HPLC, LC-MS, LC-MS/MS (LC-QqQ) and HRMS, such as LC-QToF] to analyze secondary pharma and environmental standards
- Mentor, train, and provide technical supervision/guidance to other scientists
- Maintain and troubleshoot analytical instruments
- Cross-functional collaboration (with internal and external customers) with QC, R&D, product management, production, and customer complaint support
- Technical writing, presentations in conferences and preparation of application notes/manuscripts

### **R&D Project Specialist**

Sinclair Wyoming Refining Company-Sinclair, WY

December 2014 to August 2017

Wyoming Refining Company (Sinclair Oil Corp.), Sinclair, WY, USA

#### Key Responsibilities and accomplishments

- Provided technical support in R&D projects related to oil refining processes
- Developed and troubleshoot analytical methods (GC-MS, GC-FID/TCD/SCD, ICP-OES, IEC, etc.) and analytical instruments

- Wrote SOPs and technical reports
- Performed non-routine analyses, such as detailed hydrocarbon analysis, pump failure test with trace level analysis of metals in lube oil by ICP-OES and corrosion analysis by Ion-exchange chromatography (IEC)-conductivity detector, etc
- Conduct statistical analyses of lab data. Assist in SQC program
- Train lab personnel. Practice and enforce laboratory safety
- Assisted the process department solve oil compatibility issues preventing asphaltene fouling while working with heavy waxy-crudes

### **Graduate Research/Teaching Assistant**

University of Wyoming-Laramie, WY

August 2009 to December 2014

Key Responsibilities and accomplishments

- Developed Mass Spectrometry (GC-MS, GC-MS/MS, HPLC-MS, and MALDI-TOF-MS) based analytical methods for quantitation and structural elucidation/ molecular characterization of targeted and non-targeted analytes (small, macro, and polymeric-molecules) in complex microbiological and plant tissue samples
- Developed rapid microwave-assisted derivatization protocols (silylation, esterification, acetylation, etc.) on metabolite classes, such as amino acids, carbohydrates/sugars, vitamins, lipids, free fatty acids, alcohols/sterols, sugar acids, amines, amides, etc., in biological samples to analyze by GC-MS
- Mentored and supervised undergraduate students in Mass Spectrometry based undergraduate research projects
- Taught senior level quant (analytical chemistry) and organic chemistry laboratories
- Published peer-reviewed research articles in high impact scientific journals
- Garnered extensive research experience in wide scientific areas, such as metabolomics, lipidomics, geochemistry, and environmental chemistry
- Discovered lipopolysaccharide (LPS) and lipid A (endotoxin) and elucidated their molecular structures in a Plancomycetes, Gemmata obscuriglobus

## Education

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### **PhD in Analytical Chemistry**

University of Wyoming - Laramie, WY

December 2014

### **MS in Physical Chemistry**

Tribhuvan University - Kathmandu, Nepal

### **BS in Chemistry with Biology Minor**

Tribhuvan University - Kathmandu, Nepal

## Skills

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- chemistry (5 years)
- GC-MS (5 years)
- HPLC (5 years)
- MALDI-TOF (5 years)
- microwave (5 years)
- Chromatography
- Research & development
- Quantitative research
- Quantitative analysis
- Spectroscopy
- Technical Writing
- R
- LC-MS (5 years)
- LC-MS/MS (5 years)
- Metabolomics
- Laboratory Experience
- Metabolomics (5 years)
- Analytical Chemistry
- Liquid Chromatography (5 years)
- Gas Chromatography (10+ years)
- Mass Spectrometry (10+ years)
- Lipidomics and lipid profiling (5 years)
- Process Improvement
- GLP
- Statistics

## Languages

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- English - Fluent

## Links

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<https://www.linkedin.com/in/raj-mahat-phd-12780668/>

## Additional Information

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TECHNICAL EXPERTISE/PROFICIENCIES/COMPETENCIES

GC-MS (EI, CI) • GC-MS/MS • UPLC and HPLC (RP, NP, HILIC) • High resolution mass spectrometry: MALDI-TOF-MS, LC-QToF • LC-MS, LC-MS/MS • GC-FID/ECD/SCD/TCD • SPME • Headspace-GCMS, Ion- exchange Chromatography (IEC) • Derivatization • ICP-OES • Raman Spectroscopy • AAS • UV-Vis • FTIR • X-ray

Fluorescence (XRF) • Soxhlet Extraction • Microwave Digestion • Karl-Fischer Titration • Analytical Chemistry • Method Development • Characterization • ASTM and APHA Methods • Project Management

• Technical Writing • MS Office • Statistics and SQC • LIMS • R