Job Title: Processing Modeling Engineer
Location: Boulder CO (onsite/hybrid/remote options available)
Reports To: VP Data and Information Systems

About Alta:

Alta Resource Technologies (Alta) is a next generation mining company that uses synthetic biology to separate critical minerals from conventional and unconventional resources, including e-waste. Founded in 2023, the company is expanding its team in Boulder, CO.

The exponential growth of new tech industries, as well as the information technology sector, are driving historic growth in mineral demand and stressing existing supply streams. Meeting new demand, diversifying the supply chain, and producing minerals in a more sustainable manner requires the rapid development, deployment and scaling of new technologies. This mineral challenge represents a historic opportunity for technology development and value creation. Alta is proud to be at the vanguard of this mega trend.

About the Role:
We are seeking a **Process Modeling Engineer** to develop and implement mechanistic models that support the scale-up of our chromatography-based separation technology. In this role, you will work closely with process development and engineering teams to translate laboratory-scale data into predictive models that guide commercial-scale manufacturing decisions. Your modeling expertise will be critical in optimizing separation processes, reducing development timelines, and ensuring robust technology transfer for the various operation sizes we wish to support.

Key Responsibilities:

Model Development

- Develop mechanistic models for chromatography-based separation processes, including binding kinetics, mass transfer, and column dynamics.

- Validate models against experimental data across multiple scales to ensure predictive accuracy.
- Collaborate with the lab team to validate and improve models.

Simulation and Optimization

- Collaborate with process development scientists to design experiments that generate data for model development and validation
- Perform sensitivity analyses to identify critical process parameters and operating windows

Data Management, Analysis and Integration

- Contribute to developing data management systems that meet FAIR principles.
- Develop analysis code to support the team in analyzing experimental data.
- Utilize experimental data to validate and improve model development.

Cross-functional collaboration

- Collaborate across the Biology, Chemistry, Process Engineering and Engineering teams to ensure that models meet the needs of all departments.
- Create technical documentation including model assumptions, equations, validation results, and recommendations.
- Provide technical mentorship and review for junior engineers and scientists.
- Clearly communicate technical findings, risks and recommendations to leadership and project stakeholders.

Nice to have

- Develop machine learning models to identify novel features and parameters that impact separation performance.
- Apply data-driven approaches to complement mechanistic models and improve predictive capabilities.
- Integrate ML techniques to accelerate process optimization and troubleshooting.
- Explore correlations between process variables and quality attributes using advanced analytics.

Required Qualifications:

- PhD or master’s in Chemical Engineering, Biochemical Engineering, Applied Mathematics or a related field.

- 3-5 years industry experience in process development, specifically with chromatography.
- Strong understanding of chromatography, and analytical measurement technologies.
- Experience building models using Python (preferred), R or Julia.
- US Citizenship required.

Preferred, But Not Required:

- Experience working in an AWS environment.
- Experience with common machine learning frameworks (PyTorch, Scikit-learn, Tensorflow, etc).
- Experience with git, or other version control software.

What We Offer:

- The opportunity to lead a breakthrough program redefining U.S. supply chain resilience in critical materials.
- A mission-driven, high-trust team operating at the intersection of innovation, national security, and sustainability.
- High Impact & Visibility: Direct interaction and reporting to executive leadership.
- Competitive compensation and benefits package. The starting pay range for this position is $100,000 to $150,000 commensurate with educational background and work experience. Benefits including, 401(K) medical, dental, and vision plans, or equivalent, will be provided.

Interested? Apply now! We look forward to hearing from you!

How to Apply: To apply, please email your resume and a cover letter (see below) to **talent@altatech.io**. Include your name and the job title in the subject line (i.e., [Your Name] – [Job Title]). All applications must include a one-page cover letter. The cover letter should clearly state your interest in the position and our company, outline 2–3 specific skills or accomplishments relevant to the role, and demonstrate how your experience aligns with our mission and technology platform. We expect concrete

examples that illustrate measurable impact and collaborative problem-solving in technology development. Applications submitted without a cover letter will not be considered.