U.S. DEPARTMENT of ENERGY | Office of Critical Minerals and Energy Innovation

NASEO

Critical Minerals and Materials Development and Processing – An Energy-Economy Opportunity for States

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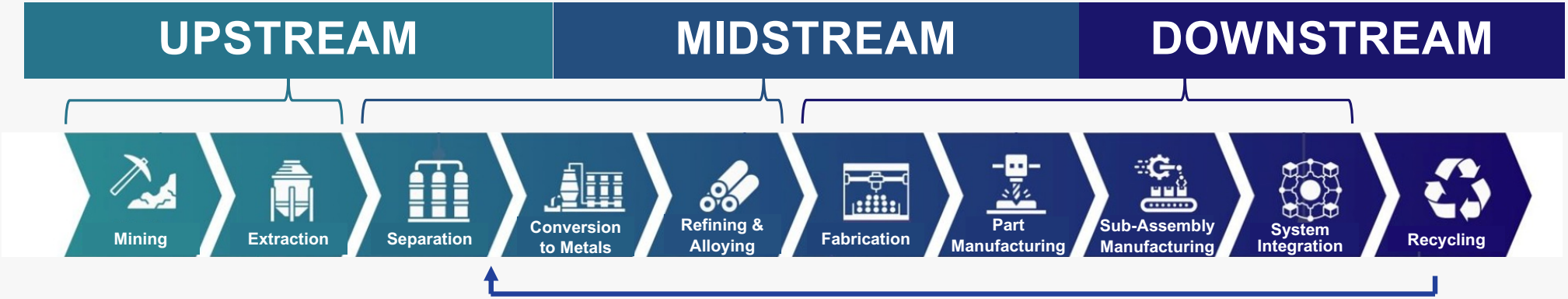
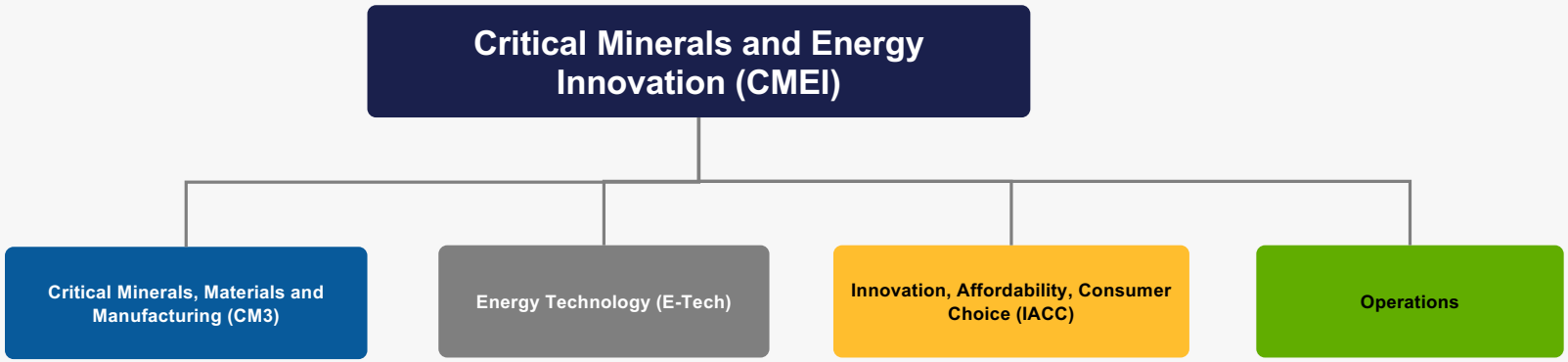
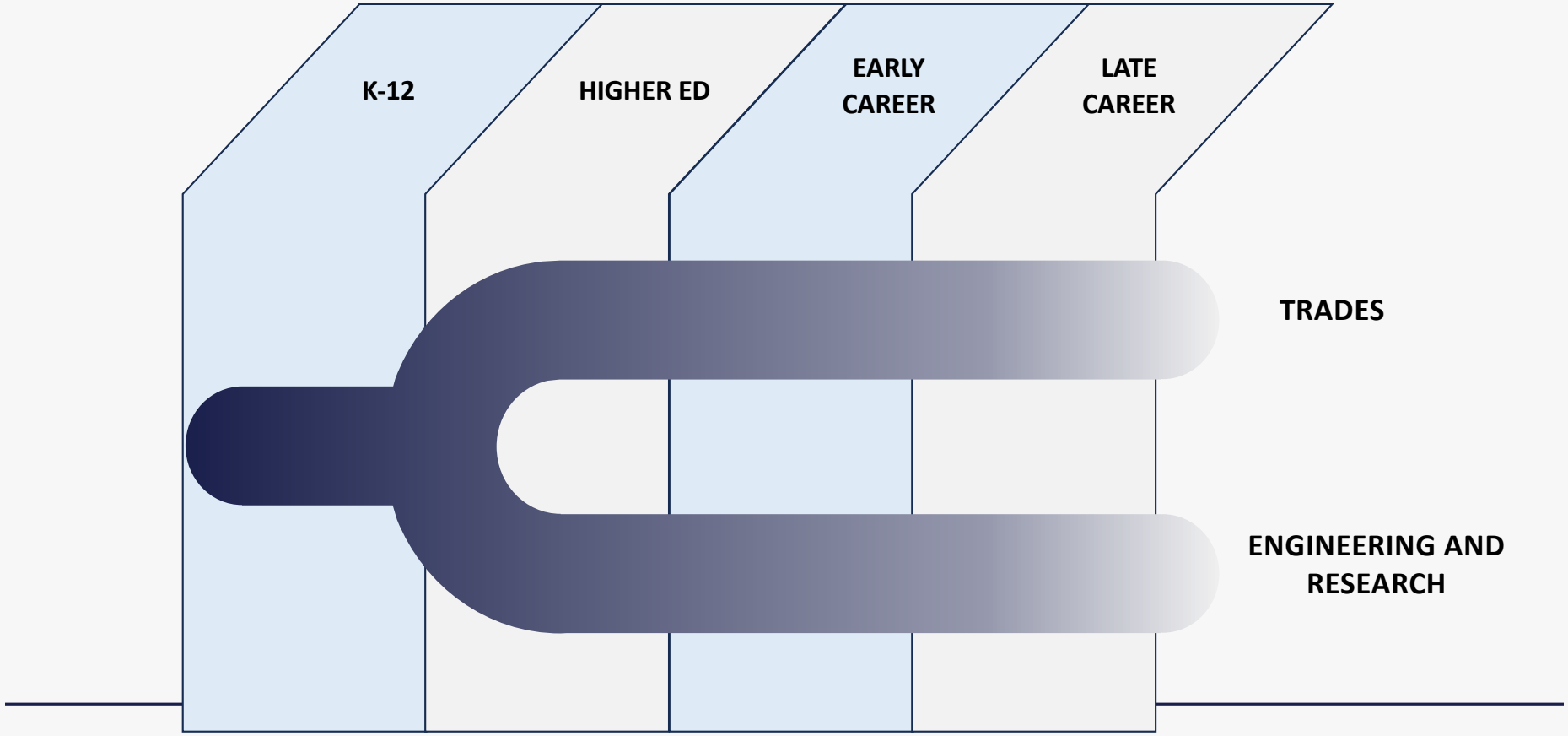
Critical Minerals and Materials Supply Chain



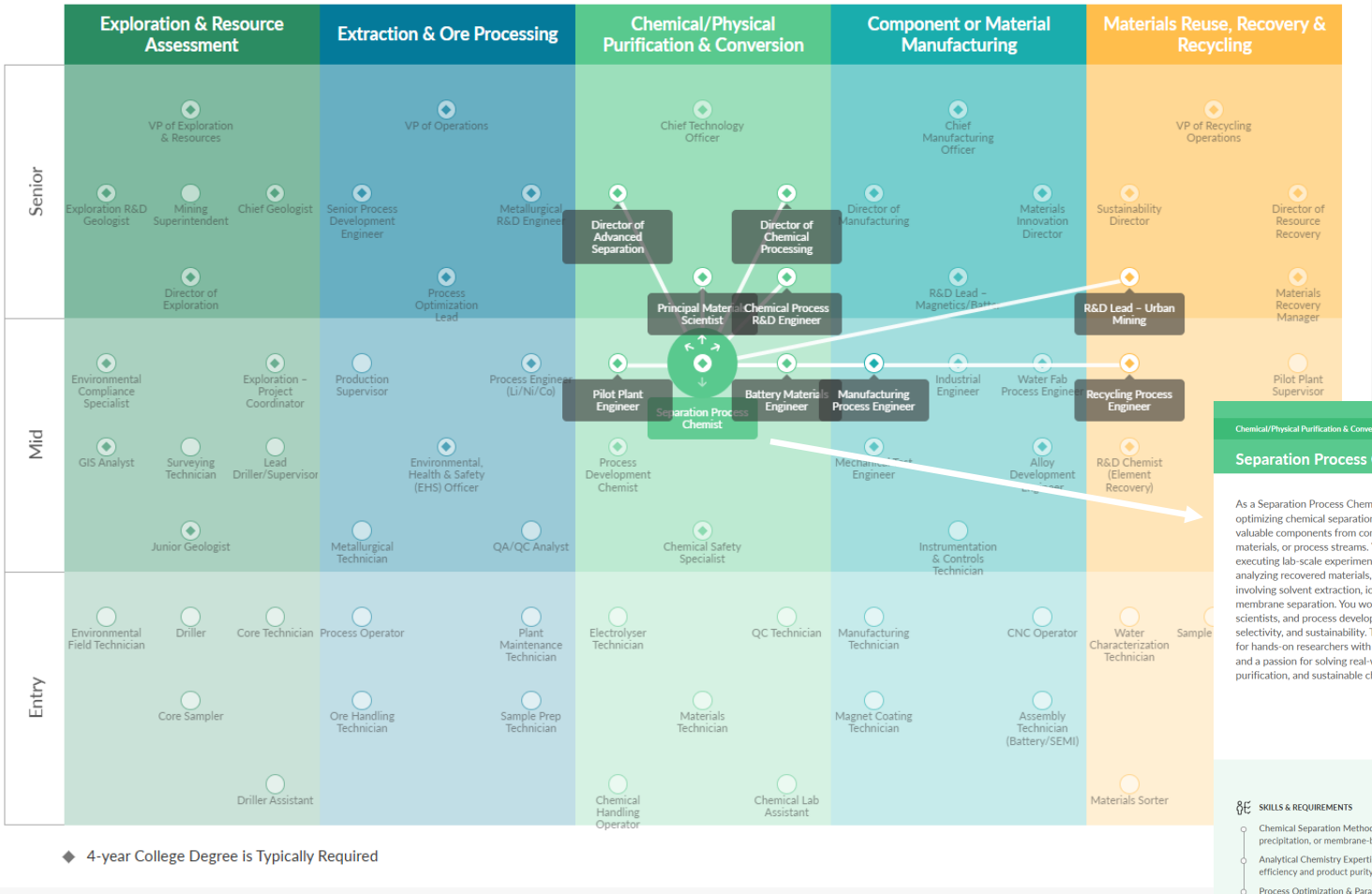
CMEI Organizational Structure



Workforce Pipeline



Critical Minerals and Materials Career Map



Chemical/Physical Purification & Conversion

Separation Process Chemist

As a Separation Process Chemist, you are responsible for developing and optimizing chemical separation techniques used to isolate and purify valuable components from complex mixtures, such as ores, recycled materials, or process streams. Your responsibilities include designing and executing lab-scale experiments, evaluating separation performance, analyzing recovered materials, and supporting the scale-up of processes involving solvent extraction, ion exchange, precipitation, crystallization, or membrane separation. You work closely with chemical engineers, materials scientists, and process development teams to improve recovery efficiency, selectivity, and sustainability. The Separation Process Chemist role is ideal for hands-on researchers with a deep understanding of separation science and a passion for solving real-world challenges in materials recovery, purification, and sustainable chemical processing.

REQUIRED EDUCATION & TRAINING

- College Degree

A bachelor's degree in chemistry, chemical engineering, or materials science is required. A master's or Ph.D. is preferred for roles involving novel method development or advanced systems modeling.

WORK EXPERIENCE

3-5 years

PAY

$85,000 - $140,000 / year

SKILLS & REQUIREMENTS

- Chemical Separation Method Development: Proficient in designing and conducting experiments involving solvent extraction, ion exchange, precipitation, or membrane-based separations.
- Analytical Chemistry Expertise: Skilled in using ICP-OES, AAS, titration, chromatography, or spectrophotometry to monitor separation efficiency and product purity.
- Process Optimization & Parameter Tuning: Experience optimizing conditions (e.g., pH, flow rate, reagent dosage) to improve yield, selectivity, and throughput in bench-scale or pilot systems.

Funding Opportunities

Energy Department Announces Actions to Secure American Critical Minerals and Materials Supply Chain

WASHINGTON—The U.S. Department of Energy (DOE) today announced its intent to issue notices of funding opportunities (NOFO) totaling nearly $1 billion to advance and scale mining, processing, and manufacturing technologies across key stages of the critical minerals and materials supply chains.

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