

## Technology/Capability Overview

- Traditionally, the field of materials science and engineering has predominantly focused on processing materials, establishing structure-property relations, and measuring material properties. This empirical approach is increasingly shifting towards the design of materials to achieve optimal functionality, resulting in a paradigm shift in materials research and development from experimental based knowledge creation to integrated computational-prediction and experimental-validation approaches.
- Current computational capabilities based on first-principles calculations and computational modeling enable more systematic and efficient search of optimal combinations of chemistry and processing parameters for alloy design.

## Industry Significance

- Adjust processing parameters with respect to variations of materials chemistry in batches
- Confine chemistry specifications of materials for improvement of processing robustness
- Develop new materials and processing routes efficiently

## Benefits to Partner

- Databases and database management for specific materials and their applications for process design
- Used by companies and institutions globally in various stages of materials research, development, and manufacturing

## Opportunity

- Development of solutions for design, development, and processing of materials of interest
- Collaboration on development of a database automation system

## Development Status

- Distributed depending on specific applications as shown in the Industry Significance

## Contact

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