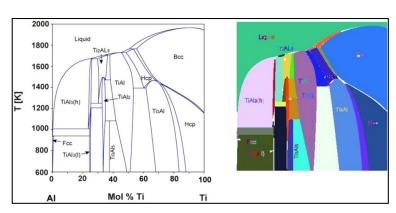# CSSI Element: MADE@UB: Materials Data Engineering at UB

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Institution: University at Buffalo, State University of New York

Award #: OAC1640867

This project brings together the pioneers in the fields of (i) AI/machine learning technologies for document recognition with (ii) data driven design through Materials Informatics. This **convergence of materials science and computer science** has led to impact in both discovery of materials and K-12 outreach and education activities.

Tools provided at the MaDE@UB Web portal (madeatub.buffalo.edu) for: Machine Learning, Data Extraction, and the Alloy Design Foundry
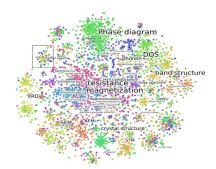
Graphics recognitions to uncover overlooked data for the discovery of new materials

Graphics Recognition to extract key feature from phase diagrams – integrates multiple data formats (figures, tables, graphs, etc).

➢ Additionally integrated are tools in manifold learning, uncertainty analysis through rough set theory, natural language processing, and topological data analysis.

➢ This approach led to the discovery of nearly 40 binary alloys that have been overlooked ('sleeper' alloys) as new glass formers were discovered.

Application of infographic tools for outreach and education activities in materials

Our Data Advocacy program provides outreach efforts to a network over 100 teachers and ~ 300 students. At WNY Youth Climate Action Summit, students employed infographic tools to represent the need for renewable energy, such as solar