



SCIENCES OF EXTREME MATERIALS

Army Research Laboratory

**INTRODUCTION AND
OVERVIEW**

Title	SEM Overview
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	Unclassified/Approved for Public Release
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DEVCOM ARL	

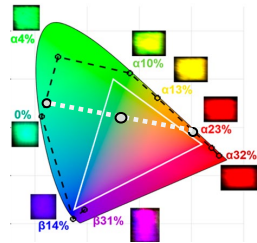
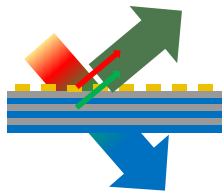
SCIENCES OF EXTREME MATERIALS DIVISION (ARD)



Materials and related **manufacturing** methods focusing on mechanical response and **performance extremes**, including active, adaptive, and flexible/soft materials; novel manufacturing science for energetic materials

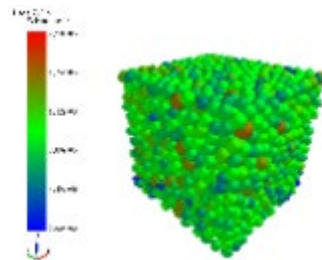
Core Competencies

Functional Materials



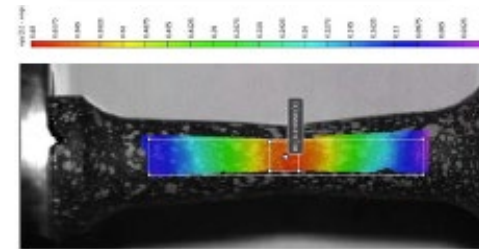
Strain Tunable Color Changing Materials

High Strain Rate Materials Response



Triaxial compression of a Ceramic

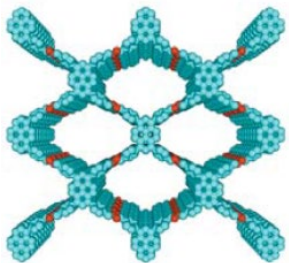
Mechanics of Materials



Digital Image Correlation of Kolsky Bar Test of Metal Alloy

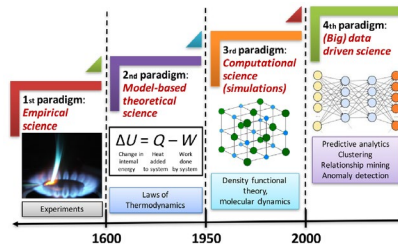
Novel Synthetic Molecular Systems

2D Polymers

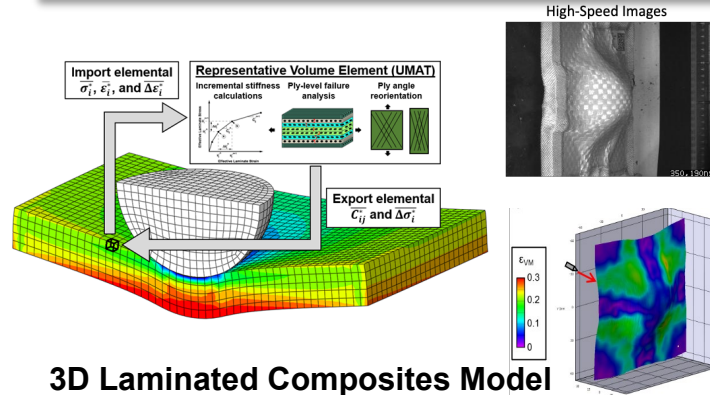


Materials and Data Science

Data Driven Science

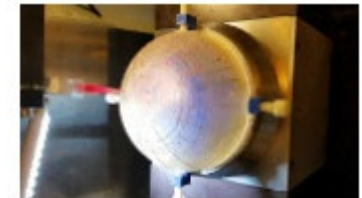


Structural and Ballistic Materials Synthesis, Processing, and Characterization



3D Laminated Composites Model

Advanced Manufacturing Sciences



Hybrid AM

ADVANCED MANUFACTURING FOR TRANSFORMATIONAL OVERMATCH AND AGILE MANUFACTURING FOR POINT OF NEED READINESS

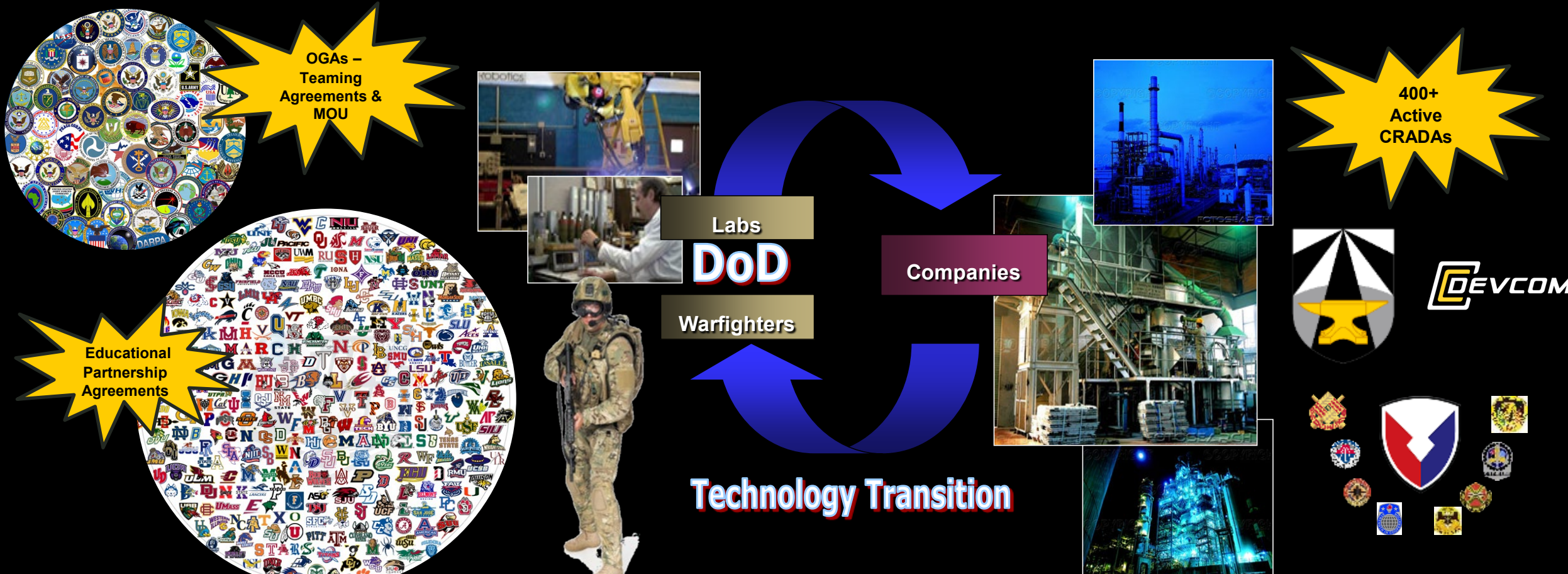


Solve Army additive and advanced manufacturing gaps by developing robust feedstocks and agile manufacturing technologies integrated with modular deep machine learning predictability solutions to enable Army rapid Cert/Qual readiness

OPPORTUNITIES – ACTIVELY SEEKING PARTNERS



Partnering is a strategic Army Futures Command initiative and is embedded in the culture. DEVCOM is continuously expanding its network of strategic partnerships with industry, academia and other government organizations—both domestically and internationally



DOD transfers technology to the Industrial Base, enabling and accelerating transition to the Warfighter



THANK YOU.

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