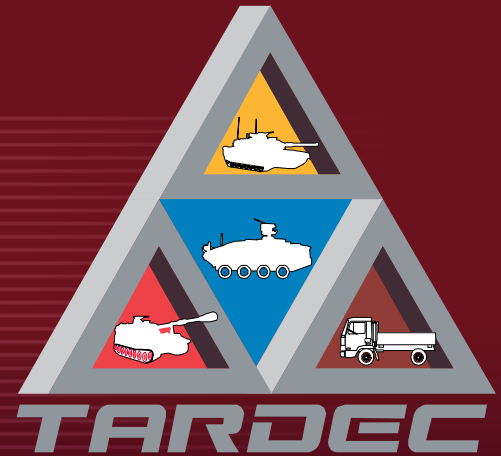




RDECOM

Advanced Materials for Military Ground Platforms



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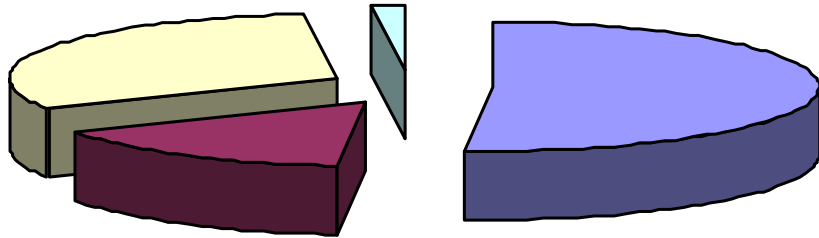
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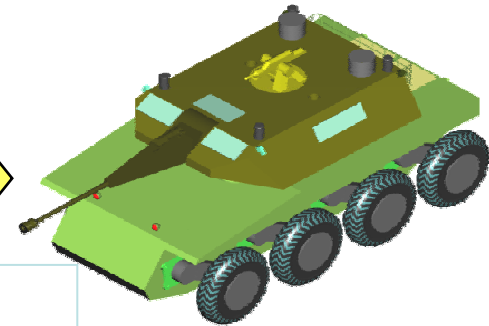
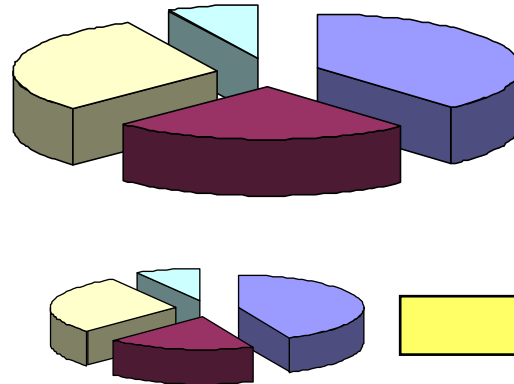


**70 ton vehicle--
36 tons for structure &
protection**



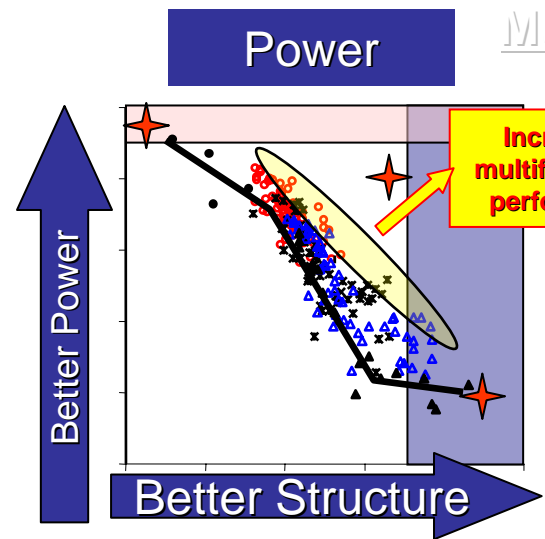
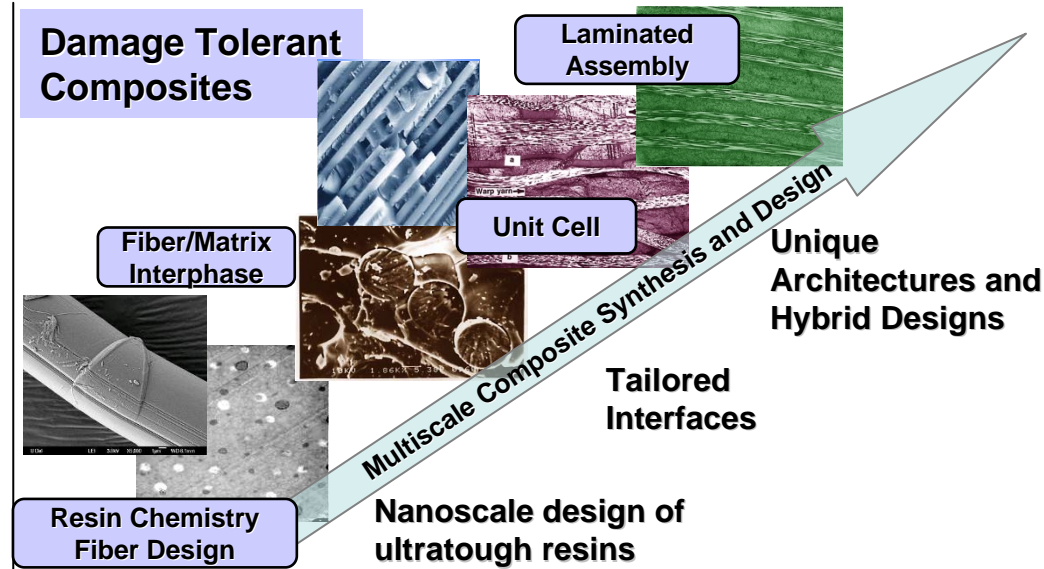
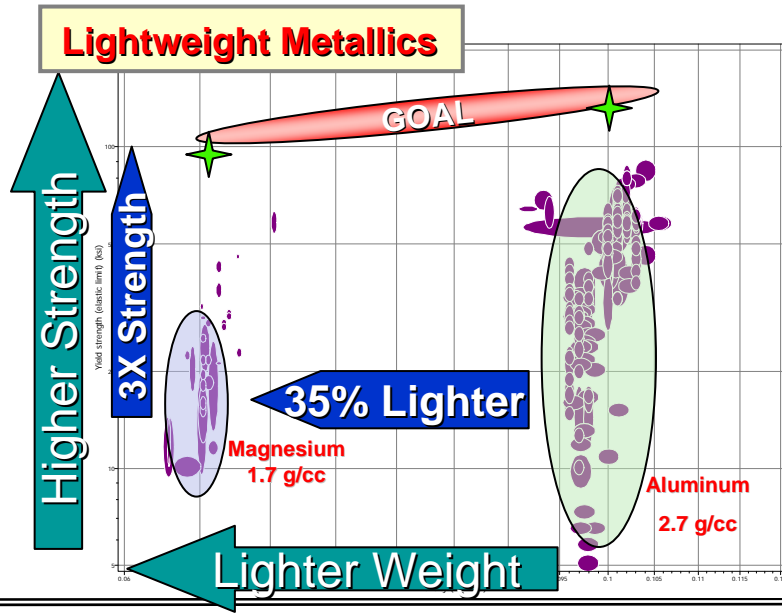
- Structure & Protection
- Lethality
- Mobility
- Other

**40 ton vehicle--
15.5 tons for
structure &
protection**



**20 ton vehicle—
8.6 tons for structure & protection!**

BUT ALSO NEED MORE POWER AND REDUCED THERMAL LOAD

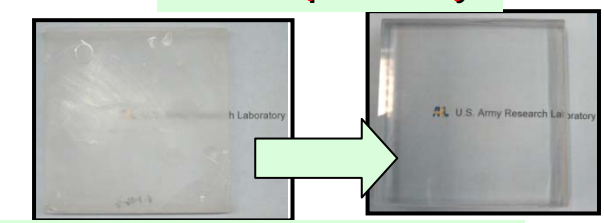


Multifunctionality: Structure plus ...

Transparency

Reduced Parasitic Mass

Lighter System Weight



New Transparent Materials

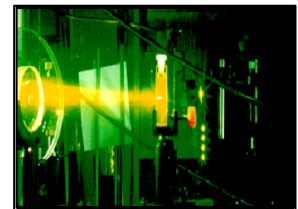
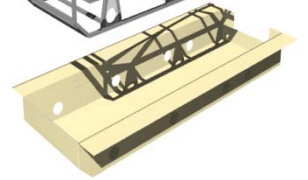
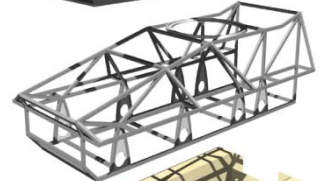
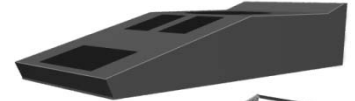
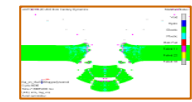
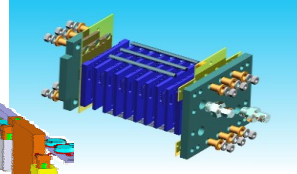
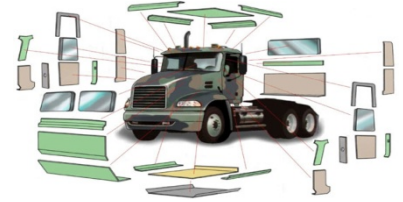
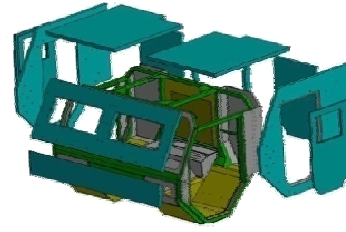
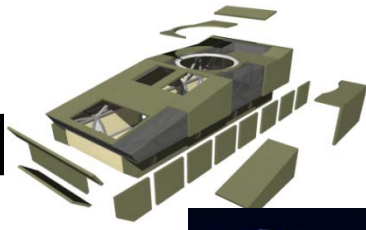
- Continuous-fiber transparent composites
- Nanoscale transparent composites
- Index matching using active materials

Materials Performance Metrics

- Translucence, haze & clarity
- Strength and damage tolerance
- Durability and reliability

TECHNOLOGY DR

- advanced structural and propulsion systems
- power electronics and electric motors
- lightweight armor
- fire suppression
- optical limiters



- **ultra high strength steels**
- **aluminum**
- **titanium**
- **magnesium**
- **Ni and Co superalloys (engine applications)**
- **PZTs**
- **metal matrix composites**
- **ceramic matrix composites**
- **polymer matrix composites**
- **ultralight engineered materials (e.g. foams, honeycomb, and sandwich materials)**
- **ultra high strength fibers**
- **resins and adhesives**

- **Modeling of Composite Materials for Energy Absorption**
- **Nondestructive Evaluation Tools for Evaluation of Composite Structures**
- **Nondestructive Evaluation Techniques for On-Line Inspection of Structures**
- **Durability of Lightweight Composite Structures**
- **Composite Crash Energy Management**
- **Joining of Dissimilar Materials**
- **Adhesively-Bonded Composites**
- **Evaluation and Prediction of the Performance/Durability of Dissimilar Material Joints**