

BALLISTIC PERFORMANCE OF KEVLAR/SHEAR-THICKENING FLUID COMPOSITES

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Technological Goal

- > Fill the need for **flexible body armor**
- > Currently fielded body armor systems employ multi-ply Kevlar® fabric armors, whose bulk and stiffness make them practical only for torso protection.
- > Ballistic protection for extremities requires **lightweight, flexible body armor** without significantly compromising mobility and dexterity.

Liquid Armor for Personal Protection

- > Investigate the ballistic properties of Kevlar fabrics impregnated with colloidal shear-thickening fluids (STFs)
- > STFs undergo a sudden and dramatic increase in viscosity above a critical shear rate, in some cases transforming to a material that exhibits solid-like behavior
- > Results in a composite which is flexible at low strain rates, such as during normal motion, but stiffens upon sudden impact to provide ballistic protection
- > Yields significantly **better flexibility and reduced weight** when compared to equally performing neat Kevlar



- Areas currently protected by INTERCEPTOR Body armor system
- Not protected with body armor due to flexibility constraints

