

<b>SBIR 06.2 PHASE I - AWARD DETAILS</b>	
<b>ORGANIZATION</b>	ARL
<b>TOPIC NUMBER</b>	A06-080
<b>CONTRACT NUMBER</b>	
<b>YEAR OF AWARD</b>	
<b>AWARD START DATE</b>	
<b>AWARD COMPLETION DATE</b>	
<b>PROPOSAL NUMBER</b>	A062-080-1824
<b>TITLE</b>	Repair Coating Containing Nanoparticle Fillers for Transparent Armor
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<b>COMPANY</b>	EIC Laboratories, Inc. 111 Downey Street Norwood MA 02062-2612  Minority Owned: No Veteran Owned: No Number of Employees: 63
<b>KEYWORDS</b>	abrasion damage, coating, sol-Gel, optical, nanoparticles, Repair, Scratch, transparent armor, polycarbonate
<b>ABSTRACT</b>	<p>Recently, in environments such as Iraq and Afghanistan, sand-induced damage has become a serious issue. Soldiers have found that abraded and scratched surfaces significantly degrade optical clarity and the usefulness of the transparent armors. To repair the damaged armors, a convenient, low cost, simple to use repair system is desired. To address these needs, EIC Laboratories proposes to develop a field curable repair coating containing optically transparent nanoparticle fillers. Research results have predicted and experimentally confirmed that nanoparticles can be functionalized such that when incorporated into a compatible polymeric coating, they will selectively migrate into cracks. Based on these research results, EIC Laboratories has designed an easy to apply coating that will selectively migrate to cracks, adhere to the surface, and restore optical transparency without distortion. The coating formulation composition, which is fundamentally highly economical, will be investigated and optimized in Phase I. The evaluation and potential of this repair coating technology as a convenient in field repair of sand-scratched polycarbonate will be demonstrated using standard test methods. Phase II will entail further optimization of the coating composition and cure properties, scale-up of the synthesis, and testing in fielded Army transparent armor</p>

	equipment.
<b>BENEFITS</b>	The low cost, easy to apply repair coatings will have numerous military and civilian applications. These applications will include repair to scratch damaged goggles, lenses, visors, face shields and laser protection goggles. It also has application for automobile repair for headlight and windows.