



CORPORATE PROFILE: Brain Cells LLC is a defense and dual-use hardware R&D enterprise focused on pre-impact projectile sensing and autonomous responsive protective materials. Anchored by proprietary intellectual property (**U.S. Patent App. 19/301,538**) and open engineering channels with the **U.S. Army Test Center (ATEC/ATC)**, Brain Cells engineers micro-scale (10mm) sensor subsystems providing 2–5 millisecond pre-contact threat detection to trigger active auxetic lattice rotational damping and smart fluid viscosity modulation before physical projectile impact.

CORE COMPETENCIES & ENGINEERING DISCIPLINES

MISSION READINESS // DEFENSE HARDWARE

01 // Pre-Impact Sensor Subsystems

NAICS 334511

Miniaturized low-profile multi-transducer sensor arrays engineered for close-proximity high-velocity projectile tracking. Delivers 2–5 ms pre-impact lead time to initiate protective countermeasures before physical contact. Low SWaP-C design optimized for personal armor, tactical helmets, and armored vehicle skin integration.

Modular Transducer 2-5ms Pre-Impact Trigger Edge Proximity Optics
Low SWaP-C

02 // Adaptive Armor & Smart Fluids

NAICS 541715

Dynamic viscosity-modulation architectures integrating magnetorheological (MR) and electrorheological (ER) fluids with active rotational damping auxetic lattices. System stiffens dynamically upon microsecond sensor trigger, transferring blunt-force impact energy horizontally across the lattice rather than transferring localized kinetic trauma to the warfighter.

MR/ER Smart Fluids Auxetic Lattice Damping Non-Newtonian Shear
Kinetic Dissipation

03 // Real-Time Micro-Edge AI & Telemetry

NAICS 541511

Air-gapped, low-latency firmware and deterministic signal processing executing on resource-constrained microcontrollers. Real-time threat classification algorithms filter false triggers from acoustic blast waves and debris, validating true ballistic projectile trajectories in sub-millisecond execution cycles.

Sub-ms Firmware Deterministic Trajectory Logic Air-Gapped MCU
Edge Sensor Fusion

04 // Ballistic Testing & Military Standards

NAICS 541330

Rigorous testing and characterization methodologies aligned directly with Department of Defense testing standards, specifically **U.S. Army ATEC/ATC TOP 03-2-805** (Ballistic Testing of Armor). Rapid benchtop prototyping, high-speed chronographic data capture, and high-G shock survivability validation.

TOP 03-2-805 Compliance High-G Shock Hardening
Aberdeen Test Protocol CRADA Alignment

FEDERAL PROCUREMENT IDENTIFIERS & CLASSIFICATION CODES

FAR COMPLIANT // SAM.GOV REGISTERED

NAICS	STATUS	DESCRIPTION
541715	PRIMARY	R&D in Physical, Engineering & Life Sciences
334511	SECONDARY	Search, Detection, Navigation & Guidance Systems
334418	SECONDARY	Printed Circuit Assembly (PCB) Manufacturing
541330	SECONDARY	Engineering Services (Military & Defense)
541511	SECONDARY	Custom Computer Programming (Edge Firmware)
541512	SECONDARY	Computer Systems Design Services

PSC	PRODUCT SERVICE CODE (PSC)	DESCRIPTION
AC12	R&D – Defense System: Weapons (Applied Research)	
AC22	R&D – Defense System: Ground Vehicles (Applied Research)	
5998	Electrical & Electronic Assemblies, Boards & Hardware	
8470	Armor, Personal (Body Armor, Plates & Helmets)	

SOCIOECONOMIC STATUS: Small Business / Micro-Entity Status
CONTRACTING VEHICLES: Direct Award, Subcontracting, SBIR/STTR Phase I/II, CRADA Candidate
CLEARANCE & CITIZENSHIP: 100% U.S. Citizens / Clearance Sponsorship Eligible



INTELLECTUAL PROPERTY & TECHNOLOGY PORTFOLIO

PROPRIETARY ASSETS // USPTO PROTECTED

U.S. PATENT APPLICATION NO. 19/301,538

CONFIRMATION NO. 6184

"Multilayered Protective Material, Methods of Manufacture Thereof and Articles Comprising the Same"**Filing Date:** August 15, 2025 | **Legal Representation:** Cantor Colburn LLP (David Rodrigues / Chemical & Materials Group).**Core Claims Architecture:** 4-layer synergistic defense apparatus comprising: (a) ultra-light carbon-reinforced external strike face (<1.5 kg/m²); (b) electrorheological/magnetorheological fluid layer; (c) active rotational damping auxetic lattice; and (d) optical fiber and proximity pre-impact trigger sensor network. Dependent claims protect microencapsulated self-healing polymers and edge AI real-time stiffness modulation.

CAPABILITIES & TECHNOLOGY PORTFOLIO, INSTITUTIONAL VALIDATIONS & TEAMING PIPELINES

DEFENSE ECOSYSTEM
ENGAGEMENTS

U.S. Army Test Center (ATC/ATEC)

MUTUAL NDA EXECUTED

Formal introductory briefings and technical evaluations conducted with civilian engineering leadership at Aberdeen Proving Ground (Cameron J. Showell, Douglas Blankenbiller). Completed 27-page Engineering Development Package submitted for technical feasibility review toward formal Cooperative R&D Agreement (CRADA).

ATEC / ATC APG

CRADA Pipeline

TRL 2-4 Elevation

Lockheed Martin SBIR Teaming

2026.R5 SOLICITATION CYCLE

Engaged with Lockheed Martin Small Business Innovation Research (SBIR) teaming desk. Quad Chart submitted across Aeronautics (Craig Owens), Missiles & Fire Control (MFC, John Fontana), and Rotary & Mission Systems (RMS) targeting pre-impact mitigation in warfighter protective envelopes.

Lockheed SBIR Quad

MFC / Aero Teaming

Subcontract Partner

HTDC Defense Cohort

STATE OF HAWAII'I COHORT

Selected participant in the High Technology Development Corporation (HTDC) SBIR/STTR Contracting Agency Cohort. Rigorous training in Federal Acquisition Regulation (FAR/DFARS), Phase I/II proposal packaging, defense commercialization pathways, and INDOPACOM theater defense requirements.

HTDC Hawaii Cohort

FAR / DFARS Audit

INDOPACOM Network

KEY STRATEGIC DIFFERENTIATORS

TACTICAL & OPERATIONAL ADVANTAGES

- **Active Pre-Impact Mitigation vs. Passive Dissipation:** Legacy armor systems only absorb energy after projectile contact. Brain Cells' sensor subsystem initiates structural hardening 2–5 ms *before* impact, blunting kinetic transfer.
- **Low-Profile Modular Form Factor:** Micro-scale electronics and protective layers engineered for seamless retrofit into existing military helmets, ESAPI ceramic plates, and tactical gear without increasing soldier burden.
- **Pacific Rim / INDOPACOM Strategic Footprint:** Operational base in Ewa Beach, Hawai'i provides direct proximity to USINDOPACOM, Marine Corps Base Hawaii (MCBH), and Pearl Harbor defense commands.
- **100% Onshore, Cleared Personnel:** Zero foreign nationals, zero offshore contractors. Complete intellectual property sovereignty and ITAR/CUI compliance across all engineering packages.

CORPORATE VERIFICATION & CONTRACTING OFFICER LIAISON DESK

GOVERNMENT & PRIME CONTRACTOR INTAKE

BRAIN CELLS LLC (Delaware LLC • Hawaii DCCA Foreign Entity # 359654 C6)**Operational HQ:** 91-1451 Keahumoa Pkwy, Ewa Beach, HI 96706 (Pacific Theater Node)**Principal Investigator / POC:** Frederick K. Amina III | **Direct Line:** (808) 354-9702**Procurement Liaison:** procurement@braincells.io | **Direct:** famina@braincells.io**Secure Systems Portal:** <https://braincells.io> | **Teaming Desk:** Pre-Award & Joint Venture Inquiries Welcomed

SAM.GOV ACTIVE

ALL AWARDS

CAGE: 16GJ4

UEI: SNYFPD8RMQA4

EXP: DEC 04, 2026