SCI GENESIS

A Materic company

N181-004

MARCOR

Kelli Booth

Providing Whole Body Protection From the Elements

We create, combine, and integrate numerous technologies to impart multi-functional properties to cosmetics and textiles. The goal is to protect war fighters, workers, and recreationists from the environmental elements.

- Thermal Barrier/Insect Repellent Camouflage Facepaint
  - Funded by Army SBIR Phase 1 and II
- Thermal Barrier/Flame-Retardant Fabrics
  - Funded by Army and Marine Corps
- Wash Resistant Insecticidal Fabrics
  - Funded by Army
- Eco-Friendly Insect Repellent Sprays
  - Funded by Army

The Marine Corps Challenge

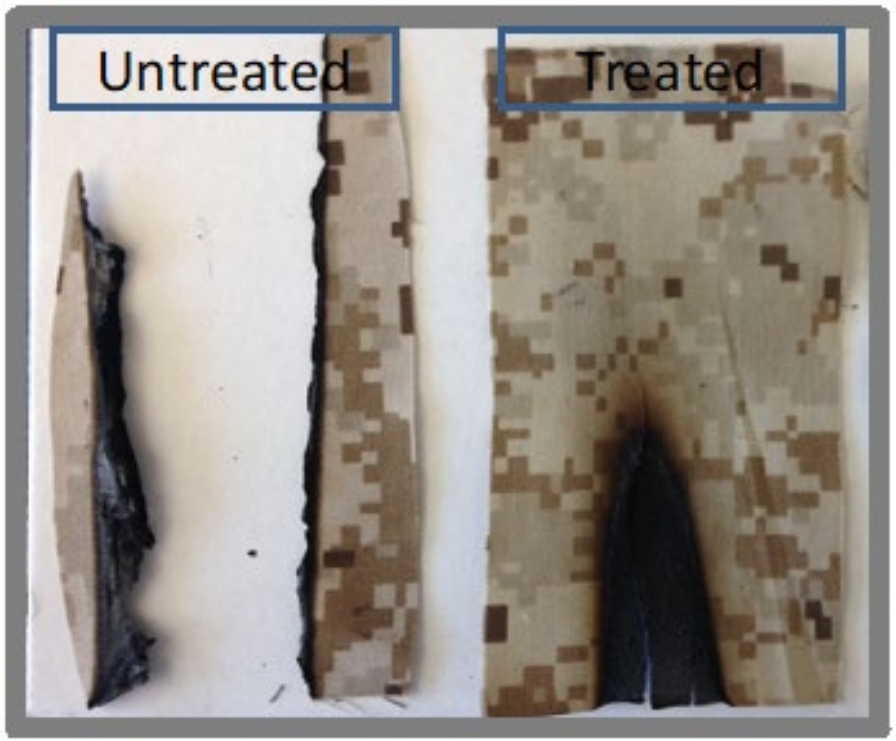
Application of a Low-Cost, Flame-Resistant Treatment to the Marine Corps Combat Utility Uniform that Provides Durable, Flame-Resistant Properties

- The Marine Corps wants an alternative to the current FR uniforms to reduce cost of flame protection and improve durability and soldier comfort.
- Acquisition Programs: MCCUU, FROG Tropical Clothing, MC Uniforms
- Target Specifications:

Attribute	Threshold	Objective
Cost Increase	5% ($4/uniform)	10% ($8/uniform)
Vertical Flame Passes at	50 washes	100 washes
Afterflame	2.0 seconds max	2.0 seconds max
Char Length	6 max	5 max
Melt Drip	None	None
Weight Gain	15%	10%

Operational Use and Improvement

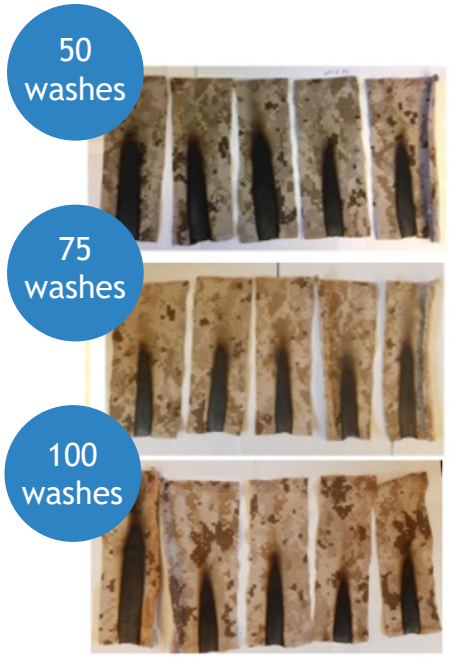
- Cost Saving – FR uniform is approximately 2.5X the cost of a standard MCCUU
- Expand distribution of FR MCCUU to troops
- Thermal Barrier Protection
- Increase uniform durability
- Thermal Barrier Protection
- Improve Soldier Comfort
- Repurpose inventoried Marine Corps. Uniforms (MCCUU) made from 50/50 NYCO to impart FR-Technology
- Navy, Marine Corps, Army, Air Force

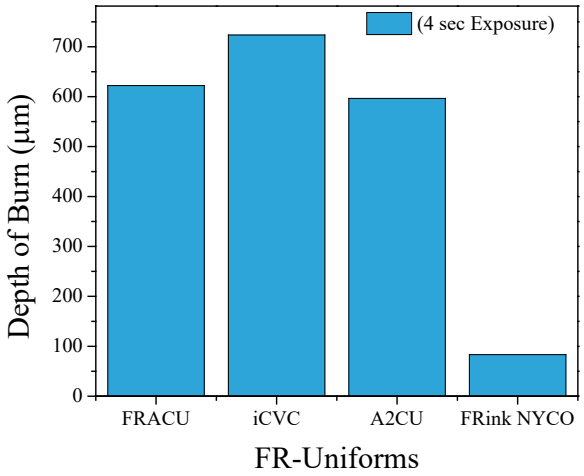


SciGenesis' Solution

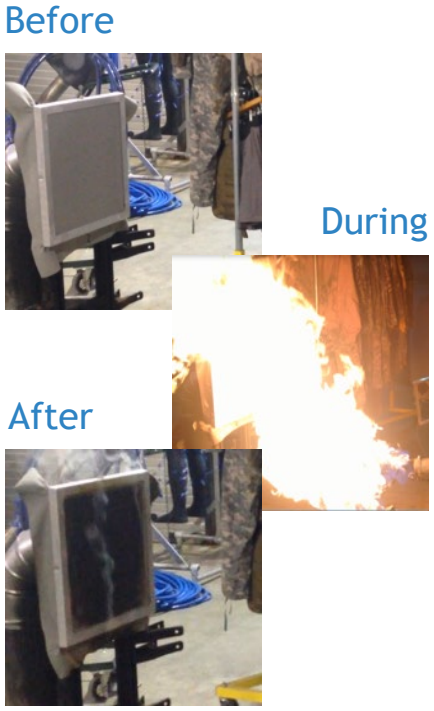
Chemical Treatment to Convert MCCUU into a Flame-Retardant (FR) Garment*
AND a Production Process for application to the current stockpile of MCCUUs

Vertical Flame Test
(ASTM D6413)





Mid-Scale FR Test
(ASTM F1930)



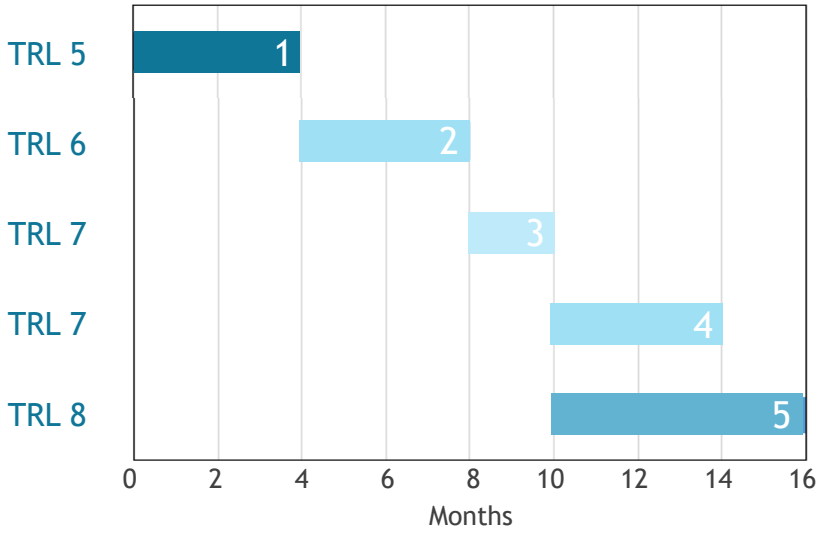
*Non-Halogenated Chemistry

Current Status

Thermal Protective Facepaint

FR-Screen Printing Ink for 50/50 NYCO

SG's Technology for MCCUU Application



- Milestone 1: Mid-Level industrial application to sewn MCCUUs (4-10 uniforms)
- Milestone 2: Industrial scale equipment design
- Milestone 3: Industrial trial of the technology's application to sewn MCCUUs (100 uniforms)
- Milestone 4: Stability and shelf-life studies
- Milestone 5: User Acceptance Testing

Key Features / Advantages / Benefits

- SG's technology allows the best from both military uniforms

Uniform	MCCUU	FR- MCCCU	SG-MCCUU
Material	50/50 NYCO	FR-Rayon & Para-Aramid	50/50 NYCO w/SG Technology
Comfortable	✓	×	✓
Field Durable	✓	×	✓
Flame-Retardant	×	✓	✓
Cost ($/uniform)	$	$$$	MCCUU + $12

- ✓ On a Lab Scale Level, SG's Technology:
  - ✓ Passes VFT (ASTM D 6413)
  - ✓ Laundering Durable (AATCC 135)
  - ✓ Outperforms in Mid-Scale version of ASTM F 1930

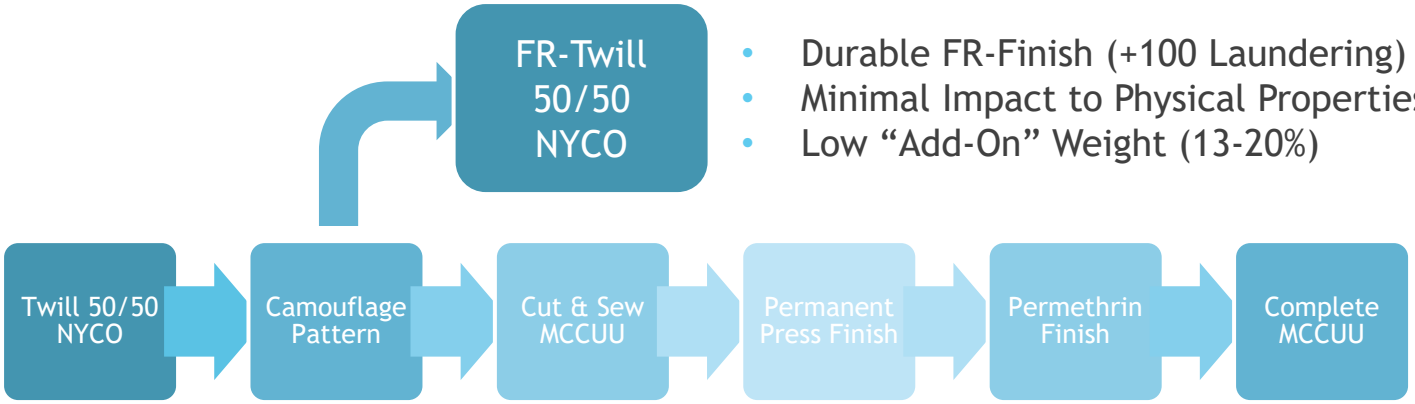
Market Opportunities

- **2020 Estimate**
  - Total FR Chemicals: $8.6B
  - FR Chemicals for textile: 7%
  - FR Chemicals for textile: $600M
  - CAGR: 4-5%
- **SciGenesis Military Customers**
  - Army

    Consumes ~400,000 NYCO uniforms/year
  - Marine Corps

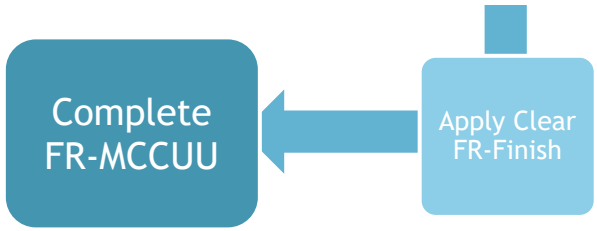
    Consumes ~180,000 NYCO uniforms/year

Commercial Strategy



- Durable FR-Finish (+100 Laundering)
- Minimal Impact to Physical Properties
- Low “Add-On” Weight (13-20%)

- Durable FR-Finish (75-100 Laundering)
- Some Impact to Physical Properties
- Moderate “Add-On” Weight (18-26%)



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