



**Scalable PFAS-free
manufacturing process
for innovative textiles**



smart

advanced manufacturing

ORGANISATION PROFILE

Insert brief description of the leading organisation: Name, Personnel, Size, Products/Services/Technical areas and R&D project expertise.

Full Legal Name: PLASMAGEAR INC , Canada

Expertise: PFAS-free nanofiber sand surface coating for fabric applications

Technical areas: electrospinning, plasma surface modification, innovative fabrics, PFAS-free treatments

PROPOSAL INTRODUCTION (I)

Vision: To develop sustainable, PFAS-free water-resistant and breathable fabrics using advanced surface modification and electrospinning technologies, ensuring high-performance protective garments tailored for global warming challenges while minimizing environmental impacts.

Motivation: There is a critical need to eliminate harmful fluorine-based substances (PFAS) used in protective clothing due to their adverse effects on health and the environment. The project aligns with global sustainability goals by reducing water and energy consumption in manufacturing. Additionally, essential sectors like law enforcement and paramedics lack alternatives that offer the right balance of air permeability, water resistance, and oleophobic properties. The development of these fabrics will also ensure compliance with regulatory standards and position the company as an industry leader.

Content:

- Development and implementation of a PFAS-free Durable Water Repellent (DWR) coating.
- Integration of surface coating and electrospinning technologies into a singular advanced unit.
- Production of novel surface-engineered nanofiber membranes.
- Optimization of manufacturing processes to enhance efficiency and reduce logistical complexities.
- Establishment of an innovative and scalable production workflow for sustainable outerwear fabrics.

PROPOSAL INTRODUCTION (II)

Expected outcome: The project is expected to deliver a fully integrated, advanced manufacturing system capable of producing PFAS-free nanocomposite films and nanofiber membranes for sustainable outerwear fabrics. This includes the development of scalable, efficient production processes and the establishment of eco-friendly, market-ready materials that meet industry performance standards.

Impacts:

- **Environmental Impact:** A significant reduction in PFAS-related environmental harm by introducing a PFAS-free alternative for water-resistant fabrics.
- **Market Leadership:** Positioning the partners as pioneers in sustainable textile manufacturing, influencing industry norms, and attracting environmentally conscious brands and customers.
- **Economic Impact:** Increased efficiency and cost-effectiveness of production processes, leading to competitive pricing and higher adoption rates in the advanced manufacturing market.
- **Innovation:** Establishing a new benchmark for integrating plasma coating and electrospinning technologies, which could catalyze further innovations in the textile and materials industries.

Schedule: 01/08/2025

Duration: 29 months

PARTNERS

Current Consortium: We have applied previously in collaboration with another nanotechnology company in Europe and got feedback that our consortium is missing a textile company. Therefore, we are looking for a textile company that will be interested in PFAS-free innovative water-resistant fabrics.

Partner search: textile company in Europe or Canada.

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