

TechConnect Ventures Sprint Challenge Brief: Innovations for Separation and Filtration

DESCRIPTION

From pharmaceuticals to energy, aircraft to submarines - the ability to separate materials is crucial for myriad applications, products, and industries. With increasing consumer and industry demand for more sustainable and effective processes, the need for separation technology innovation has never been greater.

TechConnect's client, a multi-billion dollar global leader in filtration, separation, and purification technology seeks enhancements to existing separation technologies, as well as innovative new approaches.

Three primary areas of interest include:

Sustainable Substrates For Purification

In biochemical experiments and biopharmaceutical production, it is critical to remove unwanted cellular debris from aqueous solutions. But the substrates, also known as the stationary phase, used in chromatographic-based separation processes are often produced from non-sustainable materials or cannot be reused, negatively impacting their environmental footprint.

Our client seeks novel alternatives which provide improved sustainability. Potential pathways of interest include but are not limited to:

- New materials for the stationary phase, such as:
 - Sustainably sourced resins
 - Biopolymers
 - Naturally derived fibers
- Stationary phase materials with reduced environmental impact, such as:
 - Biodegradables
 - UV-degradables
- Cleaning and sterilization approaches for material reuse

Novel Chemistries For Purification

While some purification methods rely on the physical properties of a filter to remove material, other approaches - such as affinity chromatography for protein purification - take advantage of chemically specific interactions such as antibody/antigen to enhance filtration. By coating a surface with specialty chemicals, biological or biochemical substances (either targets or contaminants) can be preferentially selected and concentrated for subsequent removal from a solution.

Our client seeks novel chemicals which can be used to selectively concentrate bio-based materials suspended in a solution. Potential pathways of interest include but are not limited to:

- Chemistries which enhance the purification process for biological samples by delivering:
 - Improved kinetics
 - Increased efficiency
 - Increased yield
- Ligand with increased chemical stability
- Purification processes supported, enables, or optimized by artificial intelligence (AI), machine learning (ML), modeling, or simulation

Cutting Edge Separation Technologies

Because our client operations across many industries and a wide variety of sectors from pharmaceutical to aerospace, we seek all separation, filtration, and purification approaches. Separation of any solids, liquids or gasses are within scope.

Note: In this area, specifically, our client seeks separation technologies currently undergoing active development or which are near commercialization.

Potential pathways of interest include but are not limited to:

- Innovations to existing approaches or technologies which deliver increases in efficiency, yield, purity, and/or sustainability
- Innovations to existing approaches or technologies which deliver decreases in cost and/or complexity
- Existing technologies adapted for new applications
- Novel separation mechanisms, such as separation without membrane or resin-free separation
- Approaches designed, enabled, or optimized by artificial intelligence (AI) or machine learning (ML)
- Simulation or modeling technologies for designing or optimizing separation processes

SUBMISSION REQUIREMENTS

All proposed technologies must be compatible with usage in a biochemical/biopharmaceutical environment. Technologies should have advanced beyond the conceptual stage and be ready to implement within 24 months.

Our client has the greatest interest in solutions which deliver improved sustainability, especially those with bio-based materials, utilization of recycled materials, or approaches which sustainably reduce or eliminate usage of common consumables.

When submitting your response, be sure to indicate to which of the three areas of interest your response is most applicable when prompted in the application form.

BUSINESS OPPORTUNITY FOR SOLVERS:

The goal of this sprint is to facilitate the contact and interaction between our client sponsor and active researchers or technology developers. TechConnect will include all complete and eligible entries in an exclusive Innovation Opportunity Report for our client.

TechConnect will invite top rated entries to pitch to our client in a virtual environment in July.

Either TechConnect or the client may contact solvers with well-matched capabilities to discuss potential partnership opportunities, including – but not limited to – demonstrations, consulting, contract research, licensing, and more.

PARTICIPATION RULES & GUIDELINES

Solvers are encouraged to review the Rules and Guidelines provided on the Sprint page for details about participation, including submission criteria, eligibility information, and more.

QUESTIONS? Contact challenge@techconnectventures.com