
## Background

The proliferation of electric vehicles (EVs) is imperative for a promising future for sustainable transportation. However, the industry faces a critical challenge in ensuring the safety of EV battery systems, particularly concerning thermal management and fire prevention. Thermal runaway occurs when battery temperatures escalate uncontrollably, poses a significant hazard to both vehicle occupants and surrounding infrastructure.

Current thermal management solutions often rely on thick, dense, and brittle fire barriers, adding weight, cost, and complexity to EV designs. To address this challenge effectively, industry and academia must collaborate to pioneer innovative solutions that enhance safety without compromising performance.

## What we're looking for

We invite innovators from industry and academia to develop a seamless fire barrier specifically engineered for application directly onto aluminum coils that will become part of an electric vehicle battery systems. This heat-activated barrier should demonstrate the ability to mitigate thermal runaway events by swiftly containing and suppressing fires within the battery compartment.

**Our must-have requirements are:**

- Fire barrier must be applied and seamlessly adhere to aluminum coils without compromising their structural integrity or electrical conductivity, surviving manufacturing processes without degradation.
- The barrier should activate rapidly in response to elevated temperatures, effectively containing thermal runaway events and preventing the spread of fire to neighboring cells or components.
- To minimize the impact on vehicle weight and packaging constraints, the fire barrier should be lightweight and have a minimal profile.
- The developed solution must withstand the rigors of automotive environments, including exposure to vibrations, mechanical stresses, and temperature variations over the vehicle's operational lifespan.

**Our nice-to-have requirements are:**

- The proposed barrier should meet or exceed regulatory safety standards and undergo rigorous testing to validate its effectiveness in real-world scenarios.
- Solutions should be economically viable for mass production, ensuring affordability and scalability across the electric vehicle market.

**What's out of scope:**

- Materials requiring applications after component manufacturing.

**Acceptable technology readiness levels (TRL): Levels 2-9**

1. Basic principles observed
2. Concept development
3. Experimental proof of concept
4. Validated in lab conditions
5. Validated in relevant environment
6. Demonstrated in relevant environment
7. Regulatory approval
8. Product in production
9. Product in market

# What we can offer you

**Eligible partnership models:**

- **Sponsored research**
- **Co-development**
- **Supply/purchase**

**Benefits:**

### Sponsored Research
Up to $50,000 based on evaluation of proposal, with additional potential funding for further development.

### Expertise
Partners will have access to industry experts in specific aluminum processes, surface engineering, and material properties. A company champion will be provided to ensure collaborative success.

### Tools and Technologies
Partners can be supplied with aluminum substrate for the purpose of testing proposed technology and formed aluminum parts for prototype testing. There is potential for industry-wide commercialization.

### Data
Partner will be supplied with information regarding thermal runaway scenarios, battery enclosure designs, and testing protocols.

### Facilities and Services
Partners will have access to our internal fire testing capabilities and other evaluation equipment located in our research facilities.

## Who we are
The Novelis R&D mission is to be the leading provider of sustainable and innovative aluminum solutions. Our team delivers industry-leading technical expertise and innovative solutions via our applied technology labs around the world. Our engineers, scientists, metallurgists, chemists and computer scientists have set the standard for aluminum alloys. Owning more than 134 automotive-specific patents, we are committed to continuing to lead the industry in innovation. We win by shaping partnerships inside the company and around the globe. Because lasting innovation doesn't happen alone. The ability to think big and act bold is at our core. It's how our breakthroughs happen. It's how we brought one of the first all-aluminum vehicle bodies to the automotive industry.

## Reviewers

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Please contact the University of South Florida Technology Transfer office representative for submission - Roisin McNally at rmcnally@usf.edu.