

# Technology Snapshot

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LOS ALAMOS NATIONAL LABORATORY

Richard P. Feynman  
Center for Innovation

## EcoVer

Clever solutions to enabling eco-friendly technologies

### Application Area

**Sector:** Advanced Materials and manufacturing

**Area:** Renewable energy

**Industry:** Hydrocarbon membrane

**Market:** Fuel cells, electrolyzers

### Partnership Opportunities

This is a startup and license opportunity.

- Cooperative Agreement
- License
- Tech Assistance
- Start-up

### Technology Readiness Level 2

#### IP Information

Patent application filed and is pending

#### Contact

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### Overview

Fluorine-based chemistries, PFAS, are toxic forever chemicals. Fuel cells and electrolyzers use PFAS membranes because of their durability and performance reliability. At this moment, there are no safe hydrocarbon membrane alternatives that match the performance and reliability standards required by industry.

EcoVer is developing a low-cost, chemically mechanically durable hydrocarbon-based membrane that performs similarly to PFAS alternatives. Unlike competitors, our membrane is designed for high mechanical properties and with a proprietary formula of additives for high chemical durability.

### Advantages

- Low CAPEX and OPEX (Eliminating corrosion and ensuring safety in manufacturing and facility design can reduce costs and the need for extra manpower.)
- Easy to tune for specific customer needs.
- No additional operational costs after purchase.
- At least 60% more chemically durable than state-of-the-art membranes, which could lead to increased lifetime in end-use devices.
- It's a chemically safe alternative and does not contain PFAS.



## Technology Description

EcoVer is designing a hydrocarbon ion-conducting membrane intended to offer a proton conductivity of 0.1-0.2 S/cm and remarkable chemical and mechanical properties. Our additives can increase the durability of existing materials by 3x in lab-scale testing. We are in the process of sourcing materials for our first MVP. Currently, we are designing our membrane for PEM fuel cell and electrolyzer applications, but it has upscale potential in applications including AEMs, flow batteries, bio-reactors, selective ion recovery and water treatment

## Market Applications

EcoVer is being developed as a membrane replacement within the rapidly growing field of hydrogen fuel cells and electrolyzers. With PFAS regulation under scrutiny in the US and EU, alternative solutions are the future.

In 2022, the PFAS membrane market valued PEM membranes at \$787.5 million and AEM membranes at \$520 million with a CAGR of 5.6 percent.

If we successfully demonstrate our membrane design, we could disrupt the \$1.3B PFAS membrane industry. Beyond hydrogen applications, our membrane could also be suitable for other ion exchange applications.

## Next Steps

Our next milestone is validation of mechanical and chemical properties at lab scale to be complete by mid-May with a viable MVP as the outcome. Following this, we will seek a partner with capabilities to validate our membrane at the stack level.