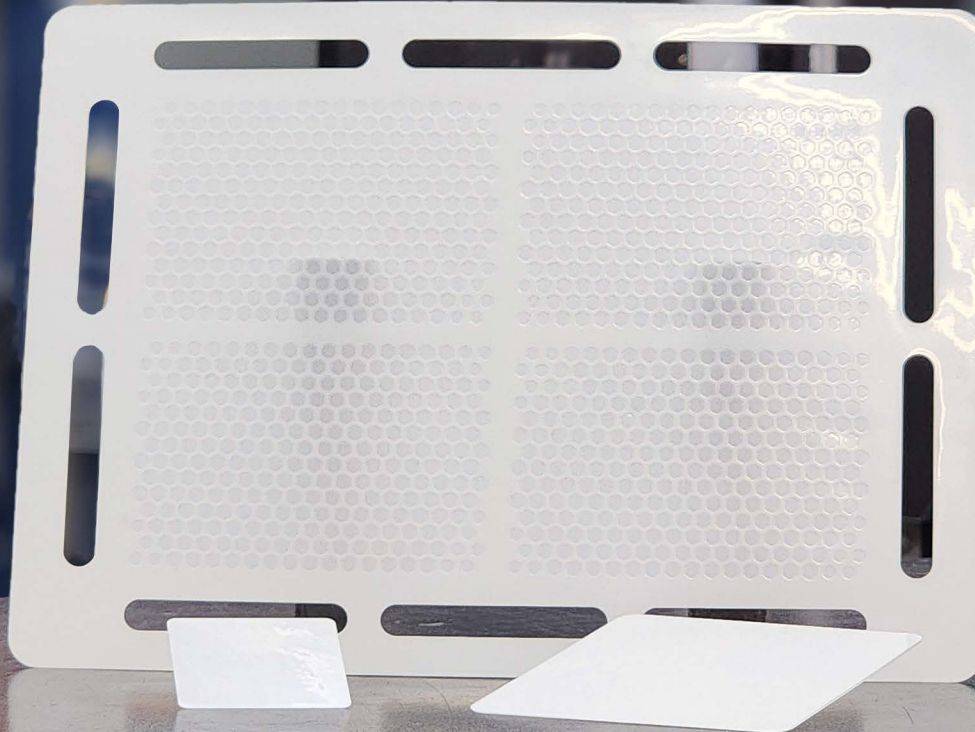


Ion-Exchange Membranes

Advanced Ceramic Membranes

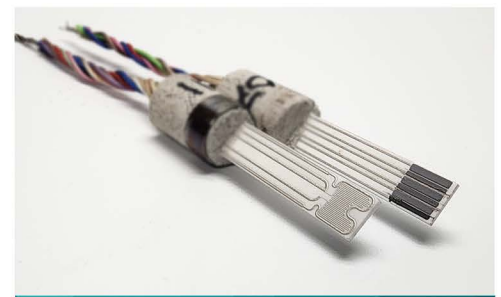
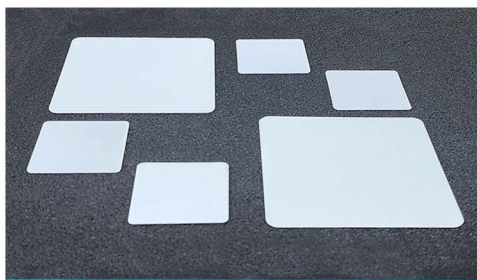


Nexceris plays a significant role in supporting the ceramic ion-exchange membrane field by commercializing innovative ceramic membranes, substrates and finished parts. These membranes, often utilized in advanced batteries like solid-state batteries and in solid oxide electrolysis cells for hydrogen generation, benefit from Nexceris' materials science expertise and the LEVER process, which aids in the acceleration of the commercialization process.

Ceramic ion-exchange membranes find applications in various sectors, including industrial wastewater treatment for selective ion removal, and potentially in fuel cells and other electrochemical devices requiring high thermal and chemical stability.

Scalable Sizes

Nexceris excels at providing customers with high-quality, dense, and flat ceramic components, ensuring tight tolerances and consistent performance. Leveraging advanced manufacturing techniques, Nexceris offers these parts in a flexible range of sizes and production quantities, accommodating both small-scale research needs and larger industrial demands.



Solutions for Sensors

Ceramic ion-exchange membranes' selective ion interactions allow them to function as sensing elements in electrochemical devices. Nexceris can support the development of such sensor technologies by providing custom designed membranes with tailored properties and offering expertise in materials integration and device fabrication.

Scalable Solutions to Meet the Most Challenging Problems



Sodium Ion-Exchange Applications

NaSICON's high ionic conductivity for sodium ions makes it an excellent solid electrolyte membrane for sodium-based electrochemical devices. Nexceris offers dense, flat NaSICON membranes with controlled thickness and composition, specifically designed to facilitate the development and testing of sodium-ion batteries and other electrochemical technologies.

Next Generation Li-ion Batteries

Next-generation lithium-ion batteries are exploring the use of ceramic membranes as solid electrolytes to enhance safety and improve energy density. Nexceris leverages its material science expertise and experience with various lithium solid electrolytes, including garnets, LiSICON, and perovskite-type materials, to support the development of these advanced battery technologies.



Nuclear Sensing Applications

Leveraging their selective ion interaction properties, ceramic ion-exchange membranes offer a foundation for developing sensors to monitor diverse parameters within nuclear reactors. Building upon a proven track record of creating specialized sensors for nuclear and other demanding environments, Nexceris brings valuable expertise to this critical application space.

Solid Oxide Electrolysis & Fuel Cells

Nexceris provides a wide range of high-quality powder and material products for fuel cell and electrolysis applications, backed by technical support to assist customers in their research and development efforts.



Proton Conducting Fuel Cells Applications

Proton conducting electrolysis cells (PCECs) and proton conducting fuel cells (PCFCs) rely on specialized ceramic membranes to selectively transport protons at intermediate temperatures. With its extensive history in advanced ceramic processing, Nexceris can supply researchers with high-quality, custom-designed proton-conducting membrane materials, such as doped barium zirconates and cerates.



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Fuel Cell Materials is the commercial product brand of Nexceris. Nexceris has thirty (30) years of experience innovating products, services, and intellectual property in the electrochemical and catalyst spaces.



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