

Arkema and Polymem win The American Chemical Society (ACS) Team Innovation Award for water ultrafiltration membranes made from Kynar® PVDF

At the American Chemical Society (ACS) ceremony held on 23rd August 2021, Arkema and Polymem received the Team Innovation Award for their collaborative development of a new generation of ultrafiltration membranes made from innovative Kynar® PVDF resins. This exciting development is the result of joint teamwork at Arkema's French and American research centers together with complementary application research by Polymem. The new membranes are currently showcased in the wastewater treatment plant at Toulouse Metropole (France).

The new generation of ultrafiltration membranes is produced by Polymem a French manufacturer of modules for water filtration, and made from a specific innovative Kynar® PVDF resin from Arkema, a global leader in fluoropolymers. This material demonstrates outstanding long-term resistance to oxidants and exceptional mechanical strength in a microporous structure. The water to be treated passes through the microporous fibers, similar to hollow spaghetti under one millimeter in diameter, to be ultra-filtered with the scale of the pores in the 10 to 20 nanometers range.

Repeated, long-term cleanability is a key feature of these membranes. Moreover, due to the long-lasting hydrophilic property of the membranes, filtration throughput is high while cleaning frequency is between 20 and 30% lower than with other polymer materials.

"Working hand in hand with Polymem and downstream users enables us to move faster and to accomplish far greater results than simply working alone. It is an outstanding example of a market driven solution" said David Silagy, General manager for fluoropolymers at Arkema.

"In Polymem, we are proud of this strategic and fruitful partnership with Arkema and are honored with this award granted by the American Chemistry Society" adds Jean-Michel Espenan, President of Polymem.

The new membranes were first tested at the Ginestous-Garonne water treatment plant commissioned in 2020.

"It is an extremely safe system. After passing through the membranes, all suspended solids and any elements in the order of 15 nm including bacteria and viruses are eliminated. The system thus perfectly fulfills its role regarding everything that is pathogenic, offering the best guarantees to prevent issues of quality non-conformity" stated Julie Ducrot, Process and Water Treatment Engineer at the Toulouse Métropole Cycle de l'Eau Department. "The treated wastewater we obtain is top quality (index A) that is entirely suitable for its intended use, namely currently just the watering of green spaces (within the facility as well as the nearby golf course)".

A solution for adapting water management to climate change

The reuse of treated wastewater is strongly encouraged by public policies in France, in that it helps adapt the country to climate change. The aim here is to reduce the pressure on water resources, but also to reduce the products needed for treatment and the energy cost in comparison with other technologies.

"The availability of this innovative technology gives momentum to a circular economy and sound water management within our community. As such, we stand among the French authorities at the forefront of this issue of wastewater reuse" said Robert Médina, *Toulouse Métropole* Vice-President for Water and Sanitation.

Toulouse Métropole

Toulouse Métropole is a Public Body for Inter-municipal Cooperation (EPCI) consisting of 37 municipalities, which represent over 760,000 inhabitants, including 475,000 living in Toulouse, France's 4th largest city. *Toulouse Métropole* oversees the supply of drinking water produced from 3 plants. It also manages 17 wastewater treatment and purification plants, the largest of which, Ginestous-Garonne, is capable of treating up to 160,000 m³ of wastewater daily.

Building on its unique set of expertise in materials science, Arkema offers a portfolio of first-class technologies to address ever-growing demand for new and sustainable materials. With the ambition to become in 2024 a pure player in Specialty Materials, the Group is structured into 3 complementary, resilient and highly innovative segments dedicated to Specialty Materials -Adhesive solutions, Advanced Materials, and Coating Solutions- accounting for some 82% of Group sales in 2020, and a well-positioned and competitive Intermediates segment. Arkema offers cutting-edge technological solutions to meet the challenges of, among other things, new energies, access to water, recycling, urbanization and mobility, and fosters a permanent dialogue with all its stakeholders. The Group reported sales of around €8 billion in 2020, and operates in some 55 countries with 20,600 employees worldwide. www.arkema.com

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