

Ceramic Membranes – New Development

Nanofiltration in Chemical and Similar Industries and Membranes for Gas Separation

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Inopor® is currently the only supplier who is able to deliver ceramic nanofiltration membranes with low cut-offs to 450 Dalton and lower, up to 200 Dalton.

Our company is a member of the Rauschert Group, which is well known for their technical ceramics and is located in Veilsdorf, Germany. Inopor® ultra- and nanofiltration membranes are made by a complex multistep procedure beginning with a porous support body made of Al₂O₃ with a pore size of about 3 µm and is ending after different coatings at a TiO₂ active filtration layer with 0.9 nm pore size prepared by sol-gel technique [1].

Inopor® membranes are successfully used in a broad range of applications for example in the water and wastewater treatment, beer, wine and fruit juice clarification, filtration of fermentation broths or for other different issues in the chemical and biotechnology industry[2,3].

Actually our research activities together with different partners are focused on the development of treatment strategies for challenging process streams and industrial effluents and new application in gas separation.

The team of Rauschert/Inopor® is participating in different development projects, supported by EU and BMBF Germany.

Status of development of substrates and membranes for “Biogas Membrane Reformer for Decentralized Hydrogen Production” – Program European Union’s Horizon 2020

Rauschert is developing new finger-like porous asymmetric ceramic supports in which one of the ends of the tube is a closed porous part. In this sense, only one seal based on Swagelok-graphite will be needed compared to the two seals needed for

conventional both open-end tubular supported Pd-based membranes for their integration in the reactor.

Thus, the probability for leaks through seals will be reduced as well as the cost of one Swagelok will be saved. Thin Pd-Ag layers have been deposited at TECNALIA onto the first 50 cm long finger-like supports. [4]

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[1] Riedel and Chen, Ceramic Science and Technology, Vol. 4

Applications, Wiley-VCH 2006.

[2] Duscher et al., Chemie Ingenieur Technik, 84, No. 7, 2012.

[3] Duscher, F&S International Edition No. 14, 2014.

[4] "BIONICO" newsletter - Issue 2 – 2nd half 2016 - www.bionicoproject.eu