

The Open Membrane Database (OMD): An open access, user-sourced archive of water purification and desalination membranes

Since the advent of thin film composite polyamide membranes over 50 years ago, the permselectivity of water purification and desalination membranes has improved only marginally. The slow progression is partly attributable to limited understanding of membrane synthesis–structure–performance relationships. To improve a shared understanding of features that maximize performance and to unify research efforts, the [Open Membrane Database \(OMD\)](#) for reverse osmosis (RO) membranes was founded by an international team of researchers from KU Leuven, Hong Kong University, Yale University, and Technion Israel Institute of Technology. It was launched in August 2021. The database contains the performance and physicochemical properties of over [650 desalination membranes](#) that are sourced from peer-reviewed journals, patents, and commercial product data. [An open-access article about the OMD](#) was also published in the *Journal of Membrane Science*. In this EMS webinar, the co-founder of the database, Dr. Rhea Verbeke, will outline the detailed functionality of the database. She will demonstrate how to upload your own membrane data via the online user submission form and highlight the recently implemented membrane performance calculators. Furthermore, she will demonstrate how the data can be used to benchmark novel RO membranes against the state of the art, to conduct meta-analyses, and to develop membrane synthesis–structure–performance relationships.

On the founding members of the OMD

The OMD was co-founded by Dr. Rhea Verbeke and Dr. Timothée Stassin from KU Leuven, and was developed by an international team of researchers from KU Leuven, Hong Kong University, Yale University, and Technion Israel Institute of Technology: Prof. I. Vankelecom, Prof. M. Elimelech, Prof. C. Tang, Prof. G. Ramon, Cody Ritt, Dr. Doug Davenport, Ryan DuChanois, Dr. Zhe Yang, Ines Nules, Adi Ben Zvi and Naama Segev.

Biography of Dr. Rhea Verbeke

Rhea completed her BSc and MSc degree at the Faculty of Bioscience Engineering at the KU Leuven, Belgium. She then pursued a PhD on chlorine-resistant desalination membranes at the same faculty but with several research stays abroad, in both industrial (Dow Chemical Company in Tarragona, Spain) and academic settings (University of the Bundeswehr and TU München in Germany, and Yale University in the USA). She investigated novel characterization techniques to determine the depth-dependent elemental composition and free-volume of desalination membranes, and developed epoxide chemistry as a novel platform for the synthesis of chemically robust membranes. She is now a visiting FWO postdoctoral researcher at the Department of Chemistry at the Johannes Gutenberg-Universität in Mainz, Germany, where she conducts research on epoxide-based polymers and membranes.