New generation of water treatment membranes

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Due to the increasing amount of contaminants in surface water, such as hormones and medicine residues, it is increasingly difficult to produce clean drinking water in the Netherlands. This requires a new generation of water treatment membranes. UT Professor Erik Roesink, affiliated with the university's MESA+ research institute, is working on these membranes and aims to realize a working pilot plant within five years. On 15 May, Roesink will make his inaugural speech at the University of Twente.

The Netherlands has the cleanest drinking water in the world. Membrane filtration is the most widely used method to purify sea water or waste water. This method involves forcing contaminated water through a membrane, which captures the impurities.

The membranes used are made from polymers and these have got better and better over the last 50 years. Nevertheless, membrane technologists are faced with major challenges. This is because waste water increasingly contains micro-pollutants, including the residues from medicines, hormones and pesticides, which are very difficult to remove from the water. The micro-pollutants derive from the use of antibiotics in livestock sector and the growing use of medicines and contraceptives. Other micro-pollutants originate from industry. These include pesticides, insecticides, plasticizers and flame retardants.

New generation of membranes

Erik Roesink, professor of Advanced Membranes for Aqueous Applications, at the University of Twente is therefore working on a new generation of membranes in order to purify our drinking water. The principle of these membranes is that they can block all kinds of micro-pollutants and that they are easier to clean. The latter is very difficult with the current generation of water treatment membranes. In his inaugural speech, to be delivered on 15 May, he will explain where to look for solutions. According to the professor, the chemical palette used to make the membranes must be extended. "Up until now, we have been using classical chemistry. However, we need to move towards a new form of chemistry." Thus Roesink sees all sorts of possibilities in the coupling of polymer chemistry and nanotechnology, a field of research in which the University of Twente is at the forefront within the Netherlands.

Roesink has set himself the goal of realizing a working pilot plant within five years. In order to meet this tight deadline, Roesink is working very closely with the business community and other research institutions.

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