

**Rajca, M. Removal of Water Contaminants with Integrated MIEX<sup>®</sup>DOC–Ultrafiltration Process in Membrane Reactor with Submerged Capillary Module. *Ochrona Srodowiska* 2013, Vol. 35, No. 4, pp. 39–42.**

**Abstract:** The paper discusses efficacy of anionic organic compound ( $\text{DOC}^-$ ) and inorganic anion ( $\text{F}^-$ ,  $\text{Br}^-$ ,  $\text{NO}_3^-$ ,  $\text{SO}_4^{2-}$ ) removal from model solution and surface water with hybrid membrane reactor in the process of MIEX<sup>®</sup>DOC ion exchange and the concurrently performed ultrafiltration. The flow-through membrane reactor with ZeeWeed<sup>®</sup>1 (PVDF) submerged capillary module was operating under vacuum conditions. The effect of the MIEX<sup>®</sup> ion exchange resin on potential reduction of unfavorable concomitant phenomenon of membrane fouling was evaluated. The study results demonstrated that the membrane reactor with submerged capillary module operating as part of the ion exchange MIEX<sup>®</sup>DOC and ultrafiltration system was a practical solution. The main advantages included its compactness, efficacious organic compound removal (70÷90% at 5 cm<sup>3</sup>/dm<sup>3</sup> resin dose), possibility to remove hazardous ozonation by-product precursors (bromides) as well as ultrafiltration membrane fouling reduction.

**Keywords:** Water treatment, natural organic matter, molecular weight, ion exchange, MIEX<sup>®</sup>, ultrafiltration.