



“Gheorghe Asachi” Technical University of Iasi, Romania



SIMULTANEOUS REMOVAL OF NITRATES AND NITRITES FROM WATER BY DONNAN DIALYSIS USING DOEHLERT DESIGN

Ikhlass Marzouk Trifi^{1*}, Beyram Trifi², Amira Djemal¹, Béchir Hamrouni¹

¹Université de Tunis El Manar, Faculté des Sciences de Tunis, Laboratoire Dessalement
et Traitement des Eaux (LDTE), Tunis, Tunisie

²Laboratoire Matériaux, Traitement et Analyse (LMTA), Institut National de Recherche
et d'Analyse Physico-chimique (INRAP), Biotechpole Sidi Thabet, Tunisie

Abstract

The simultaneous removal of nitrate and nitrite from water was investigated in this study using the Donnan dialysis. First, as a preliminary study, the removal of one component in the feed compartment was performed considering different parameters such as the concentration of counter-ion in the receiver compartment, concentration of nitrate and concentration of nitrite separately in the feed compartment. Then, the removal of nitrate and nitrite simultaneously in the feed compartment was conducted through three membranes, namely AFN, AMX and ACS. The membrane that displayed the most advantageous properties in the exchange is the one that provided the highest rate of counter-ion transport from the receiver to the feed; that has been afterwards used in the optimization according to the Response Surface Methodology.

Keywords: anion-exchange membrane, Doehlert, Donnan dialysis, nitrate, nitrite

Received: February, 2020; *Revised final:* September, 2020; *Accepted:* October, 2020; *Published in final edited form:* June, 2021

* Author to whom all correspondence should be addressed: e-mail: ikhlasstrifi@gmail.com; Phone: +216 71871282; Fax: +216 71871282