

Combined humic substance coagulation and membrane filtration under saline conditions

Nidal Hilal^{a*}, Mohammed Al-Abri^b, Hilal Al-Hinai^c

^aCentre for Clean Water Technologies, University of Nottingham, Nottingham, NG7 2RD, UK
Tel. +44 115 951 4168; Fax: +44 115 951 4115; email: nidal.hilal@nottingham.ac.uk

^bDepartment of Chemical and Petroleum Engineering, Sultan Qaboos University, Muscat, Oman

^cResearch Council of Oman, Sultanate of Oman

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ABSTRACT

The effects of poly diallyldimethylammonium chloride (PDADMAC) and copolymer of dimethyl aminoethyl acrylate (CoAA) coagulants on membrane performance are investigated under different conditions using ultrafiltration (UF) and nanofiltration (NF) membranes. It is evident that PDADMAC performance is better than CoAA in removing humic substances (HS) with both membranes, P005F and NF270, having equal fouling potential. Salinity results showed reduction in HS retention and increase in fouling with increasing salinity from 10,000 to 25,000 ppm NaCl using P005F UF membrane. No further reduction in retention or increase in fouling was experienced when salinity was increased to 35,000 ppm NaCl, while NF270 NF membrane experienced reduced retention and increased fouling throughout the studied salinity range. Finally, TMP did neither affect HS retention nor NF270 fouling, but increased P005F fouling.

Keywords: Membranes; Seawater; Humic substances; Polyelectrolytes

* Corresponding author.