

November 21-22, 2022 London, UK

# 5<sup>th</sup> International Conference Renewable Energy & Emerging Technologies

Journal of Fundamentals of Renewable Energy and Applications ISSN: 2090-4541 Voume: 12

# Using geothermal energy in membrane distillation process application using a novel ceramic membrane for brackish water desalination

## Saad A. Aljlil

King Abdulaziz City for Science and Technology (KACST), Saudi Arabia

Membrane Distillation (MD) is a useful technology for water desalination possible at low temperatures using inexpensive membranes offering high salt rejection. Therefore, in the present study, economically and eco-friendly Saudi red clay, tetraethyl orthosilicate, ammonia and sodium alginate powder as a binder were used to fabricate a ceramic membrane for membrane distillation using deothermal energy for heating the feed water to 70oC. The prepared membrane was tested using a Vacuum Membrane Distillation (VMD) process and showed promising permeate flux and salt rejection results. The membrane was characterized by SEM, mechanical testing, contact angle, pore size distribution analysis and VMD tests were performed using deionized water, magnesium sulphate solution, sodium chloride solutions and hot raw well water. An average flux of 13.10 kg/(m2·h) with 98.96% rejection was obtained using raw well water. During continuous well water desalination tests, the membrane exhibited a stable performance for 4 h. The average flux decreased by 16.5% after 10 h, possibly owing to fouling because of salts and

suspended solids. The membrane performance was recovered after the saltwater tests by applying a known cleaning procedure.

#### Biography

Saad Aljili is a Full Research Professor at the National Center for Desalination & Water Treatment Technology, KACST. He received his PhD in Chemical Engineering from Syracuse University, the USA in 2005. His research interests include membrane synthesis, water desalination, industrial wastewater treatment and adsorption Technology for the removal of trace elements, heavy metals and dyes from waste effluents. He has published more than 60 scientific research papers in international journals and conferences. In addition to the above, he also published four scientific books and has 20 patents. He is the editor-in-chief of Applied Water Science. He was also awarded-The Prize of the Custodian of the Two Holy Mosques, King Abdullah bin Abdulaziz to honor inventors and talented "Takreem"-A prestigious Award in Saudi Arabia during 2013.

### Received: 29-09-2022 | Accepted: 01-10-2022 | Published: 14-10-2022

Page 05