

## In situ ultrasound enhancement of octanoic acid directional solvent extraction for seawater desalination

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### ABSTRACT

The low yield and high salinity of the water product have limited the use of directional solvent extraction desalination method to the treatment of only low salinity water. In this research, in situ ultrasound enhancement of octanoic acid solvent extraction desalination is reported. The pre-prepared 3.5% (w/w) of saltwater solution and octanoic acid were mixed at five different temperatures which resulted in two phases. The performance of extraction for each set was evaluated based on salinity, yield of the recovered water, and solvent residual in the product water. The calculated yield of pure water under the ultrasound effects was higher than that without the ultrasound. This is due to the role of ultrasound in weakening the intermolecular interaction to dissociate water from salt, increasing the solvent efficiency in extracting water. The recovered water salinity was lower by using the ultrasound which can be explained as result of increasing the water yield.

**KEYWORDS:** Desalination; Directional Solvent Extraction; Octanoic Acid; Seawater; Ultrasound.

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