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Desalination of Seawater by Freezing and Thawing Technique

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Summary

Freezing and thawing technique which highly concentrated solution obtained at the earlier stage of thawing under controlled thawing rate has been applied to freeze concentration equipment. While focusing on the diluted solution obtained at the latter stage of thawing, Application of freezing and thawing technique to desalination of seawater has been examined in this study.

Concentration more than 20% from seawater has been successfully achieved by freezing and thawing technique, although it was difficult to achieve it by conventional freeze concentration method. Freezing and thawing technique showed good separation of seawater into mineral salts and highly concentrated solution and freshwater.

Prototype of freeze concentration equipment has been developed by improving its energy efficiency. Effective utilization of cheaper electricity at night would promise good economical feasibility of freezing and thawing application to desalination.