Abstracts

The characteristics of microwave melting of frozen packed beds using a rectangular waveguide

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The melting of frozen packed beds by a microwave with a rectangular waveguide has been investigated numerically and experimentally. It was performed for the two different layers, which consist of frozen and unfrozen layers. This paper focuses on the prediction of the temperature field, as well as the microwave energy absorbed, and the melting front within the layered packed beds. Based on the combined model of the Maxwell and heat transport equations, the results show that the direction of melting against the incident microwave strongly depends on the structural layered packed beds because of the difference in the dielectric properties between water and ice.

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