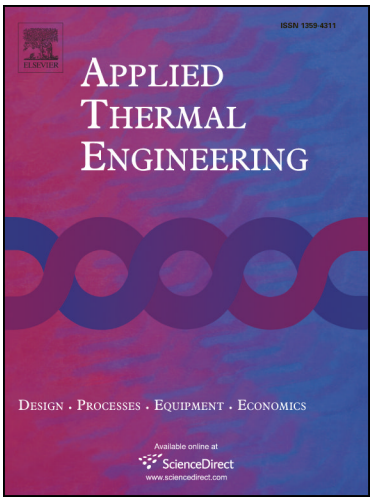

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Experimental investigation of Heat and mass transfer in a LiBr-H_2O solution falling film absorber on horizontal tubes: Comprehensive effects of tube types and surfactants

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Abstract

This paper studied the effects of various surface geometries and surfactants on the LiBr-H_2O solution falling film absorption, and the heat and mass transfer during the absorption process. Three different tubes (plain tube, floral tube and floral finned tube) were tested for the LiBr-H_2O solution with two different surfactants (2-Ethyl-1-hexanol and 1-Octanol). The results indicate that the heat and mass transfer coefficients of each tube gradually decrease with solution falling down the tube bundle. It is also showed that the effect of surfactant on heat and mass transfer is obviously greater than that of tube surface geometry. Furthermore, with 2-Ethyl-1-hexanol as the surfactant, the heat and mass transfer can be improved by 400% and 350%, respectively. The results of comparative study show that the heat and mass transfer performance of floral tubes with 2-Ethyl-1-hexanol is more stable and reliable than others.