Hydrodynamics and Heat Transfer of Liquid Nitrogen Laminar Falling Films with Interfacial Shear Stress

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This paper studies liquid nitrogen laminar flow in a brazed heat exchanger. The physical models of hydrodynamics and heat transfer are established for the laminar saturated falling film under countercurrent and co-current shear stress. The nonlinear equations of film thickness and heat transfer coefficient in the streamwise direction are given in the present paper, including the effects of the interfacial shear, the intensity of interfacial convection heat transfer and the Reynolds number.