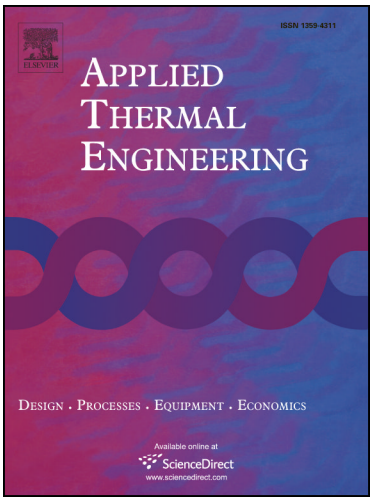

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Hydrodynamic characteristics of cyclohexane in a horizontal mini-tube at trans- and supercritical pressures

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Abstract: In this paper, an experimental study on the hydrodynamic characteristics of cyclohexane has been conducted at pressures of 2.5 to 5.5 MPa, inlet temperature of 30 to 100 °C and heat flux of 60 to 205 kW/m^2. The hydrodynamic characteristics curves of the cyclohexane were obtained in a horizontal stainless steel tube with 2.0 mm hydraulic diameter. The multi-valued hydrodynamic characteristics were analyzed theoretically and experimentally. In experiments, the effects of the system pressure, inlet temperature and heat flux on the hydrodynamic characteristics were studied. And the dimensionless parameter boundaries of the negative slope area on the hydrodynamic characteristic curves were obtained for trans- and supercritical fluid.

Keywords: trans- and supercritical; hydrodynamic characteristics; mini-tube; negative slope area; static instability.

Nomenclature

a,b,c	coefficient
C_p	specific heat, kJ/(kg K)
d	inner diameter, m
D	outer diameter, m
f	friction factor
f'	mixed friction factor
h	specific enthalpy, kJ/kg
I	current, A
L	length, m

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