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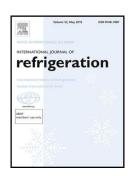
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## ACCEPTED MANUSCRIPT

# Experimental investigations of R134a and R123 falling film evaporation on enhanced horizontal tube

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#### **Highlights:**

- Falling film evaporation of R134a and R123 outside different horizontal enhanced tubes is experimentally studied.
- It is found that R134a provides around 2-3 times of heat transfer coefficients of those of R123 at the larger film flow rate region.
- It is indicated that both heat flux and tube surface structure have different effects on the heat transfer performance of two refrigerants.
- Comparisons between the data of smooth tube in the present paper and previous heat transfer correlations are conducted.

#### **Abstract**

Falling film evaporation is an efficient heat transfer mode in refrigeration and air conditioning industries. In this paper, the falling film evaporation performances of R134a and R123 outside four enhanced tubes and a smooth tube are tested. The results reveal that: with the decrease of film flow rate the falling film heat transfer coefficients of both R134a and R123 on the five tubes exhibit two general stages (a plateau stage and a sharp drop stage); for R134a the plateau is quite uniform while for R123 a mild decrease occurs with the decrease in film flow rate. The four enhanced

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