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DETERMINATION METHODS OF BOILING HEAT FLUX

METODY WYZNACZANIA GĘSTOŚCI STRUMIENIA CIEPŁA DLA WRZENIA

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Abstract

Boiling is a phase-change phenomenon, which is of significant practical application potential due to large heat flux values exchanged in the process. The paper provides an overview of calculation methods that enable to determine the values of pool boiling heat flux on smooth surfaces. The most commonly used correlations were analysed and the boiling phenomenon occurring on smooth surfaces has been discussed based on the experimental data. A modification of the Rohsenow model has been proposed with the values of the constants determined experimentally.

Keywords: boiling, correlations, heat transfer, heat flux

Streszczenie

Wrzenie to zjawisko związane ze zmianą fazy czynnika, które ma znaczny potencjał praktyczny z uwagi na wymianę dużych gęstości strumienia ciepła. Artykuł przedstawia metody wyznaczania gęstości strumienia ciepła wymienianego przy wrzeniu. Analizuje najczęściej stosowane korelacje i opisuje zjawisko wrzenia, odbywające się na powierzchniach gładkich, w oparciu o badania eksperymentalne. Zaproponowano modyfikację modelu Rohsenowa zawierającą nowe wartości stałych eksperymentalnych.

Słowa kluczowe: wrzenie, korelacje, wymiana ciepła, gęstość strumienia ciepła

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