Experimentelle Untersuchungen der Strömunscharakteristik und des Wärmeübergangs bei welligen Rieselfilmen

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Cuvillier Verlag Nov 2006, 2006. Taschenbuch. Book Condition: Neu. 209x147x9 mm. Neuware - Abstract In the present work experimental investigations of the flow characteristic and heat transport of wavy silicone oil films were accomplished with different angles of inclination and Kapitza numbers, which allow a deeper view into the structure and the heat transport phenomena. From the experimental results of laminar-wavy and turbulent films dimensionless approximation equations for different parameters were determined for the description of the film flow like the film thickness, wave frequency and the wave velocity. Furthermore new boundaries for the different film regimes could be discriminated from the results. A substantial part of the work was the development of more suitable temporally and locally high resolving measurement techniques. Thus a measurement technique on the basis of the fluorescence intensity method was developed, which is able to determine simultaneously the film thickness and the wave velocity. A further component of the work was the measurement of the film velocity of periodically excited two-dimensional-wavy films with the Particle Image Velocimetry PIV. The velocity field of a complete length of a two-dimensional wave could be reconstructed by simultaneous film thickness measurements. By measurements of the wall temperature distribution with...

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