عنوان مقاله:

Measurement and Investigation on the Jet Interface Structure

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نویسندگان:

C. Gong - *School of Energy and Power Engineering, Jiangsu University ۱, Zhenjiang, Jiangsu, ۲۱۲۰۱۳, China*

M. G. Yang - *School of Energy and Power Engineering, Jiangsu University ۱, Zhenjiang, Jiangsu, ۲۱۲۰۱۳, China*

W. D. Jia - *Key Laboratory of Modern Agricultural Equipment and Technology, Jiangsu University ۲, Zhenjiang, Jiangsu, ۲۱۲۰۱۳, China*

خلاصه مقاله:

The well understanding of interface structure of liquid jet is the basis of the research of primary breakup. In this paper, the interface structure of liquid jet is captured by using a high-speed photography. The key parameters of interface structure, streamwise wavelength, spanwise wavelength and generation position, are measured based on a power spectral method. The results show that jet interface is featured by a group of periodic structures in the region near the nozzle exit. The position where periodic structure generated fluctuates in a certain region with the variation of time and spanwise position. The spanwise wavelength of these periodic structures is the function of nozzle diameter and the wavelength increase ratio of transition region. Along the streamwise direction, the streamwise wavelengths of these structures increase with a small ratio. With the Weber number increase, the streamwise wavelength is significantly decreased while the spanwise wavelength has no remarkable change. A Reynolds number that defined with streamwise distance, jet velocity and viscosity is proposed to estimate the onset of interface structure, and Reynolds number is equal to ۴۲۰۰۰ in this paper.

کلمات کلیدی:

Liquid jet, Interface structure, Wavelength, Transition position