

AN OVERVIEW OF EXPERIMENTAL ACTIVITIES AT THE THERMAL FLUID SCIENCES LABORATORY, UNIVERSITY OF MISSOURI-ROLLA (USA)

Akira Tokuhiko

Assist. Prof., Department of Nuclear Engineering, University of Missouri-Rolla, 1870 Miner Circle, Rolla,
Missouri 65409-0170, USA, e-mail:tokuhiko@umr.edu

Keywords: artificial heart valve, heat transfer measurements, near-wake dynamics, ultrasound Doppler velocimetry, particle image velocimetry

ABSTRACT

The Thermal Fluid Sciences Laboratory (TFSL) at the University of Missouri-Rolla, Nuclear Engineering Department was inaugurated in summer 2000. TFSL is presently centered on two velocimetry systems for detailed flow measurement studies; that is, ultrasound Doppler (UDV) and particle image velocimetries (PIV). The lab is currently has four ongoing investigations as follows:

- 1) flow characterization of artificial heart valve designs using the Met-Flow UVP,
- 2) flow (UVP) and heat transfer measurements of natural convection flow in a thin rectangular cell with hydrophilic particles,
- 3) measurement of near-wake dynamics of a single bubble in downward flow of water using PIV, and
- 4) measurement of near-wake dynamics of a single oil droplet in downward from of water using PIV.

The presentation will describe some initial results from the experiments, comments on student involvement using the UV/PIV and future plans to expand the use of both UVP/PIV.