

4. Simultaneous Velocity and Concentration Fields in a Turbulent Round Jet

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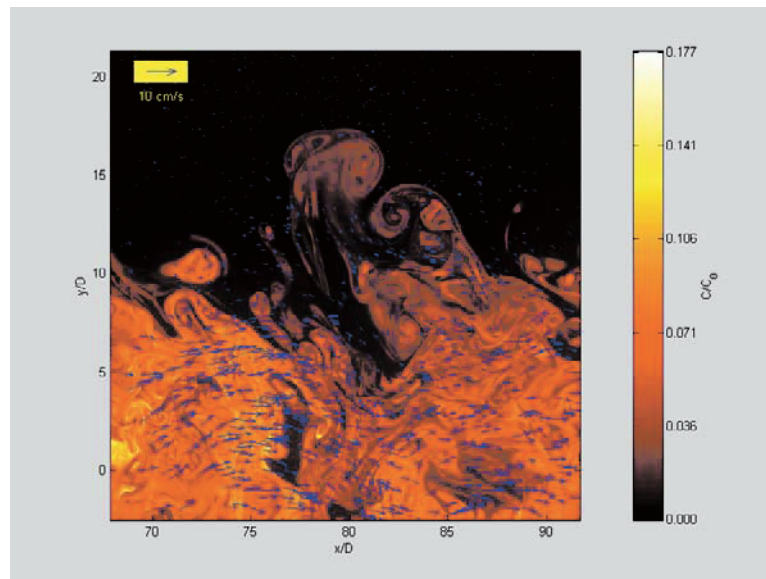


Fig. 1(a)

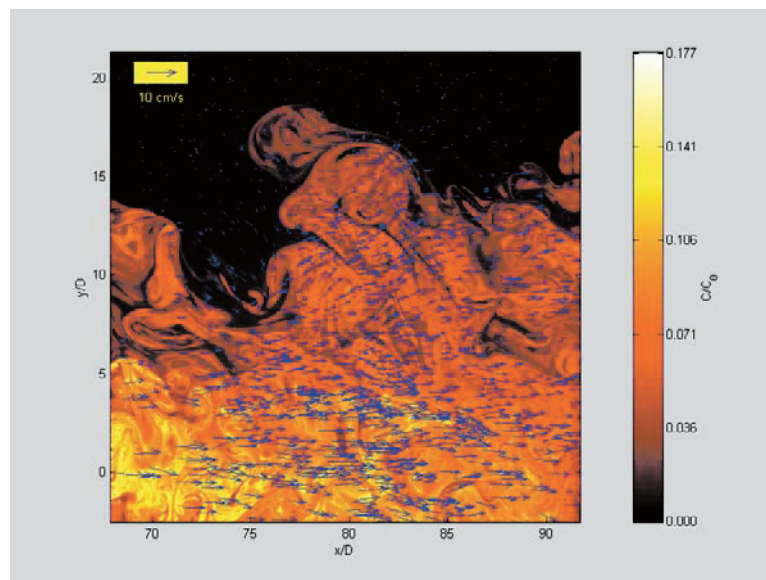


Fig. 1(b)

An experimental technique combining particle tracking velocimetry (PTV) and laser induced fluorescence (LIF) was used to measure velocity and scalar concentration simultaneously. The measurement was taken in a neutrally buoyant turbulent round water jet with an exit diameter of $D = 4.4$ mm and exit velocity of $U_0 = 1.06$ m/s resulting in a Reynolds number of 4210. Fluorescein dye (initial concentration of $C_0 = 5$ ppm, pH = 8.5, temperature = 16.0 C) was seeded with neutrally buoyant hollow glass spheres and used as the jet source. Figures 1 (a) and (b) show two instantaneous measurements. The jet is in the horizontal (x) direction with the jet orifice located at $x = 0$, $y = 0$.