Experimental Study of Mixing dynamics in Stratified Jet DUO
XU, JUN CHEN, Purdue University — Stratification due to density difference or
temperature difference modifies flow structures significantly. In order to character-
ize the mixing process in stratified flows, momentum and scalar flux terms are to
be analyzed. In this study, Particle Image Velocimetry (PIV) and Planar Laser
Induced Fluorescence (PLIF) are applied to simultaneously measure velocity and
density fields generated by a horizontal stratified turbulent jet. The effects of stable
stratification and unstable stratification are examined. Flow dynamics at two char-
acteristic Richardson numbers is analyzed to by examining the development of flow
statistics. The dataset is also applied to test different mixing models.

Duo Xu
Purdue University

Date submitted: 09 Aug 2010

Electronic form version 1.4