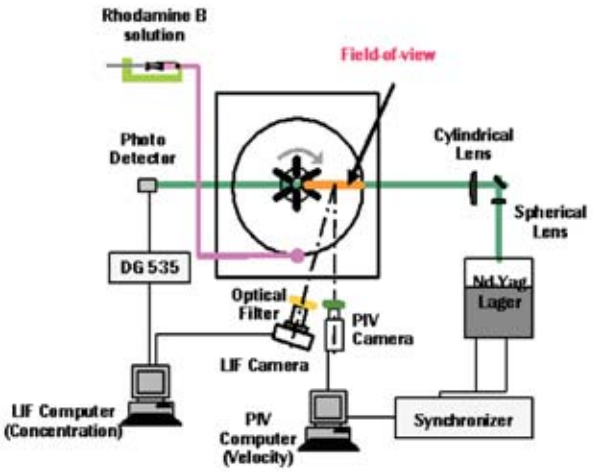

Fig. 1 Experimental Setup for PIV/LIF simultaneous measurement

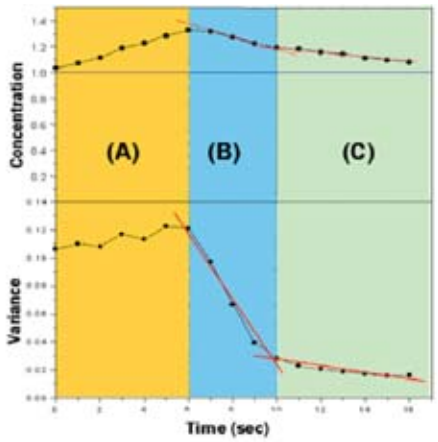

Fig. 2 Different three mixing periods
(A) : Continuous infusing period, (B) : Rapid turbulent mixing period, (C) : Slow molecular mixing period

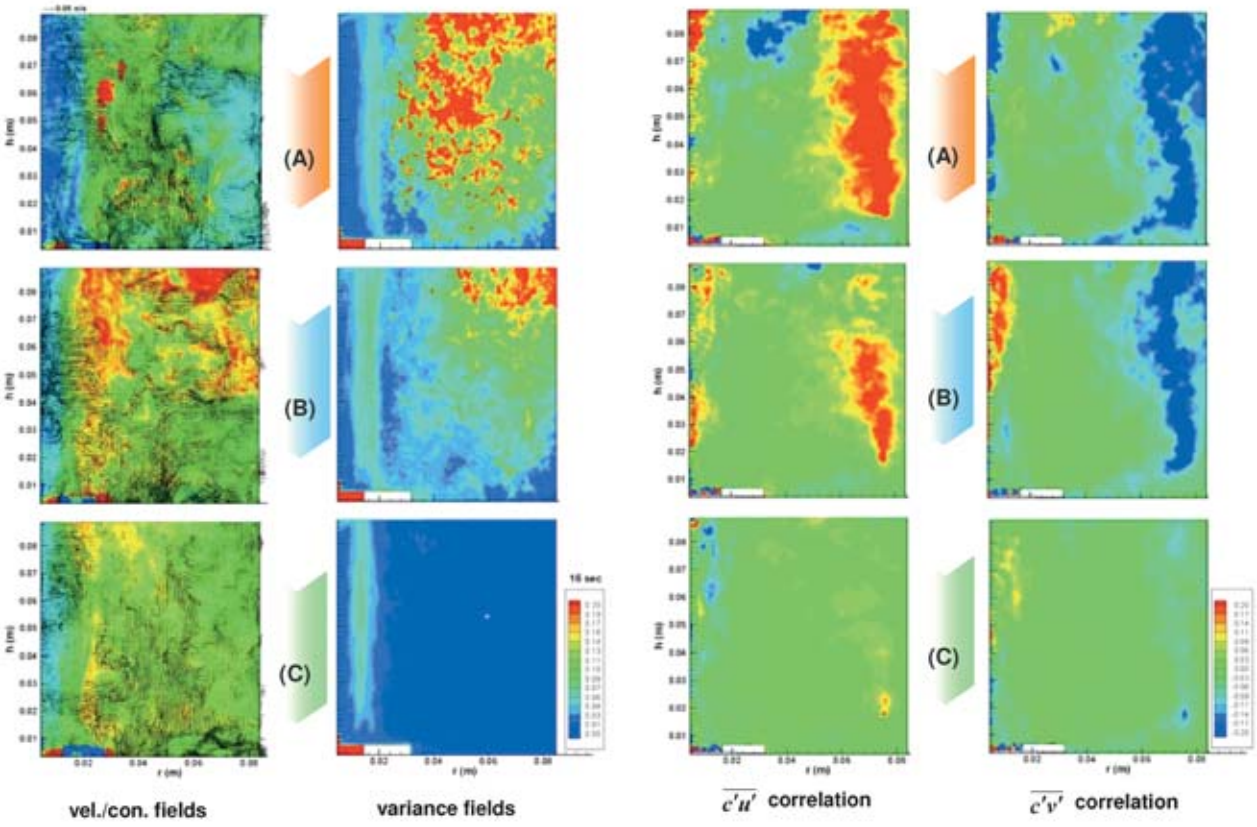

Fig. 3 The temporal and spatial mixing characteristics in a stirred mixing tank

VISUALIZATION OF TURBULENT MASS TRANSFER IN A STIRRED MIXER

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Simultaneous measurements of turbulent velocity and concentration fields in a stirred mixer tank have been carried out by using a combined PIV/LIF technique. Instantaneous velocity fields are measured by a 1K×1K CCD camera while the concentration fields are determined by measuring the fluorescence intensity of Rhodamine B tracer excited by the second pulse of Nd:Yag laser light (Fig. 1). It is shown that the general features of the mixing patterns are highly dependent on the local flow characteristics during the rapid decay of the mean concentration. However, the small scale mixing is found to be independent of the local turbulent velocity fluctuations
The correlation fields between concentration fluctuation and velocity fluctuation represents the active mixing region.