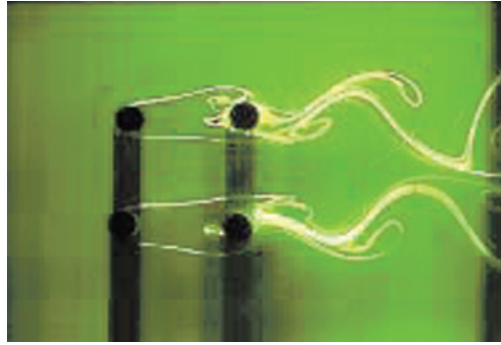


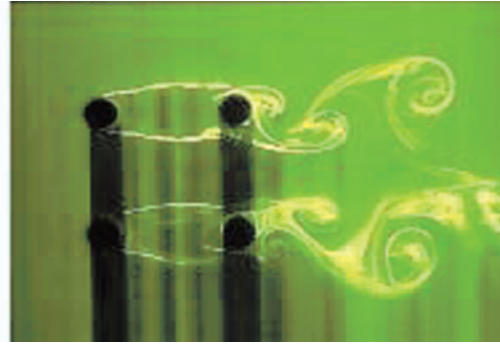
## Flow Patterns of Cross-Flow Around Four Equispaced Cylinders at Low Reynolds Number

Lam, K. <sup>1)</sup>, Li, J. Y. <sup>1)</sup> and So, R. M. C. <sup>1)</sup>

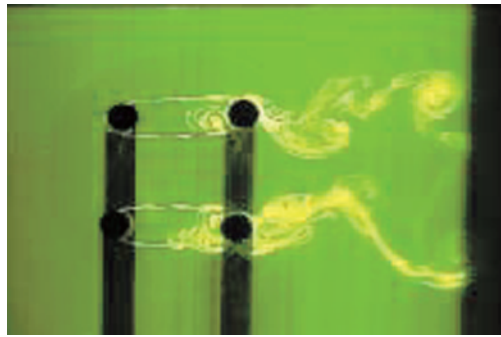
1) *Department of Mechanical Engineering; The Hong Kong Polytechnic University, Kowloon, Hong Kong*



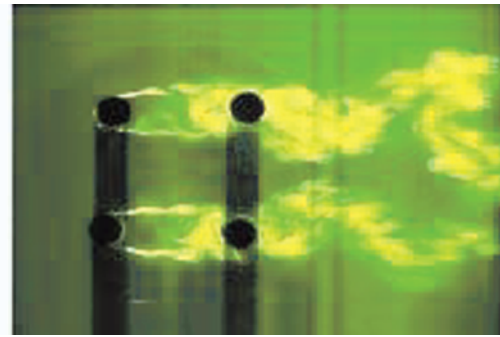
$\alpha=0^\circ$   $Re=100$



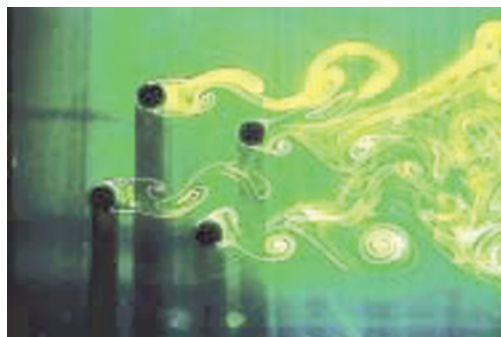
$\alpha=0^\circ$   $Re=400$



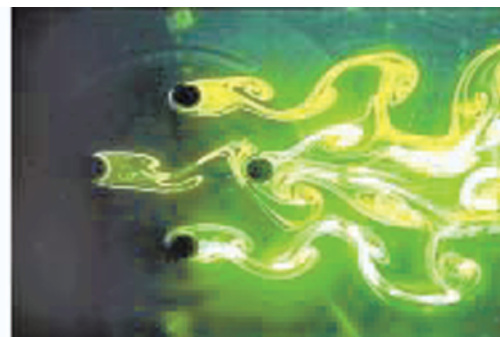
$\alpha=0^\circ$   $Re=600$



$\alpha=0^\circ$   $Re=1400$



$\alpha=20^\circ$   $Re=200$



$\alpha=45^\circ$   $Re=200$

Flow patterns around four equi-spaced ( $L/D = 4$ ) cylinders vary with Reynolds number and incident angle. Laser Induced Fluorescence (LIF) visualization was employed to study the various flow patterns and the vortex interactions. Investigations show that different flow patterns result in large difference in velocity fields, pressure fields and force characteristics of the cylinders. The patterns also provide an important database for the validation of numerical simulations.