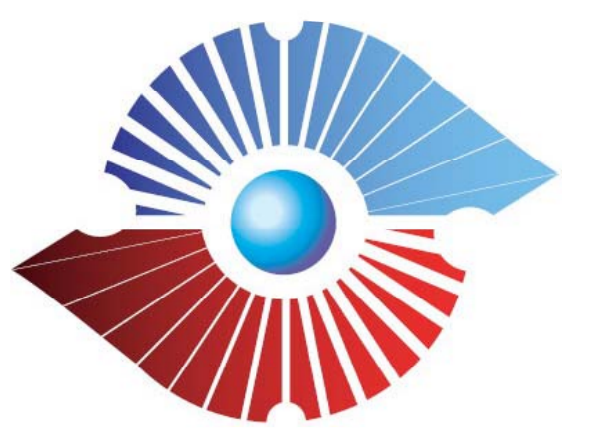




數值模擬與流場可視化實驗室

Numerical Simulation and Flow Visualization Lab



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● 主要研究項目 (Research Focus)

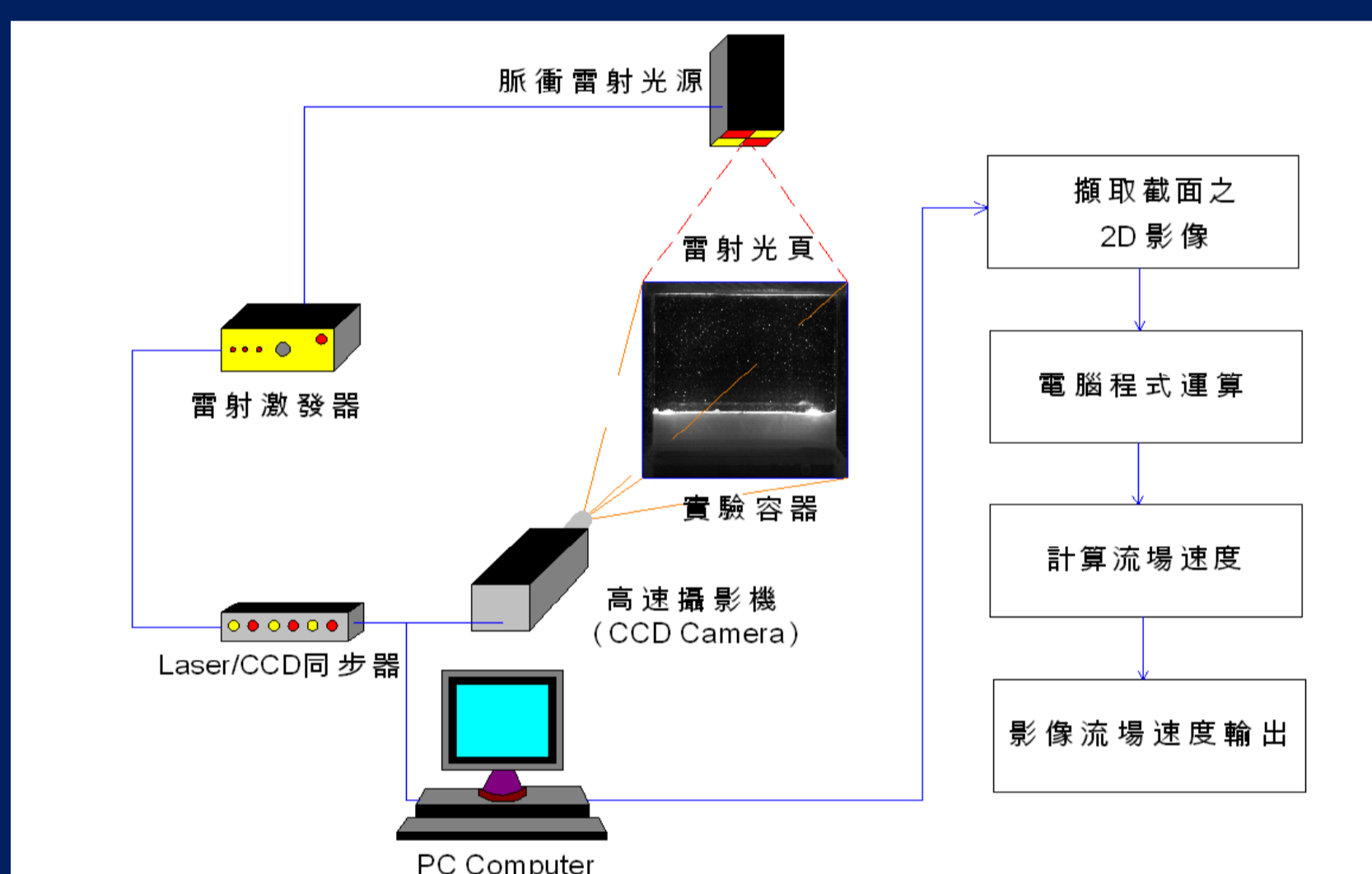
- PIV流場量測
Flow field measured by PIV
- 暗影法之流場可視化
Shadowgraph technique
- 暫態液晶法之流場可視化
Flow visualization by thermochromic liquid crystal (TLC)
- 雙波長全像干涉術
Two-wavelength holographic interferometer technique
- 固液相變過程之熱質傳研究
Heat and mass transfer during the liquid-solid phase change process
- 潔淨室氣流模擬分析
Airflow simulation within cleanrooms

■ 能源與冷凍空調領域之氣流模擬分析

Application of airflow simulation in the fields of energy and refrigerating and air-conditioning engineering

● 主要研究設備與軟體 (Research Facility)

- 質點影像速度儀
Particle Image Velocimetry (PIV)
- 雙波長全像干涉術量測設備
Two-wavelength holographic interferometer
- 紋影法流場可視化設備
Facility for Schlieren technique
- Fluent熱流數值模擬軟體 ANSYS FLUENT
- Tecplot後處理軟體 Tecplot for post processing



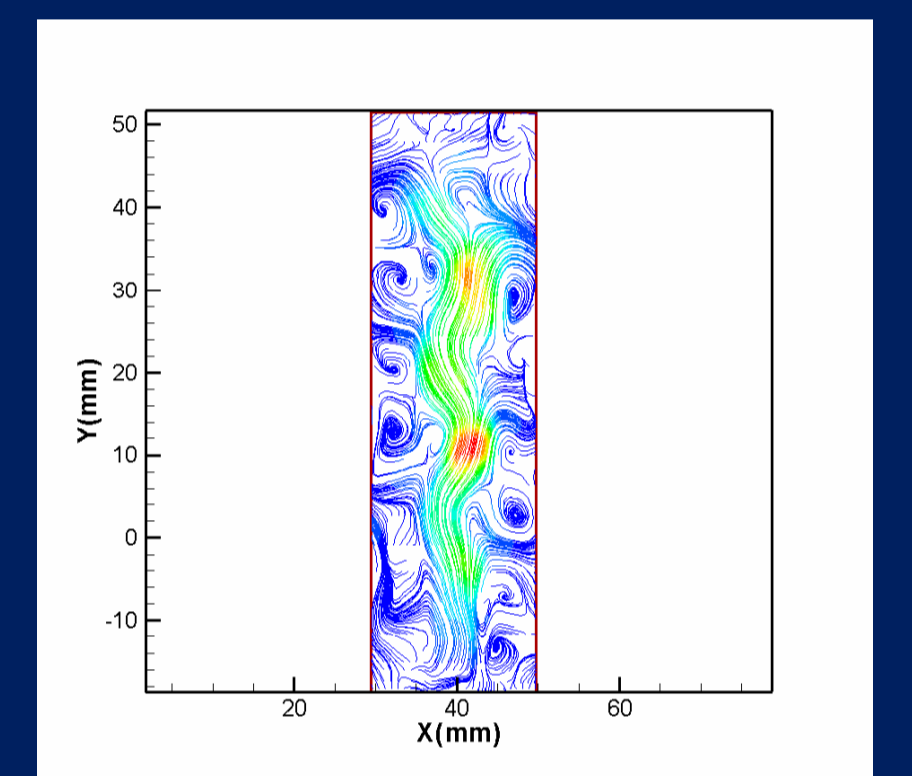
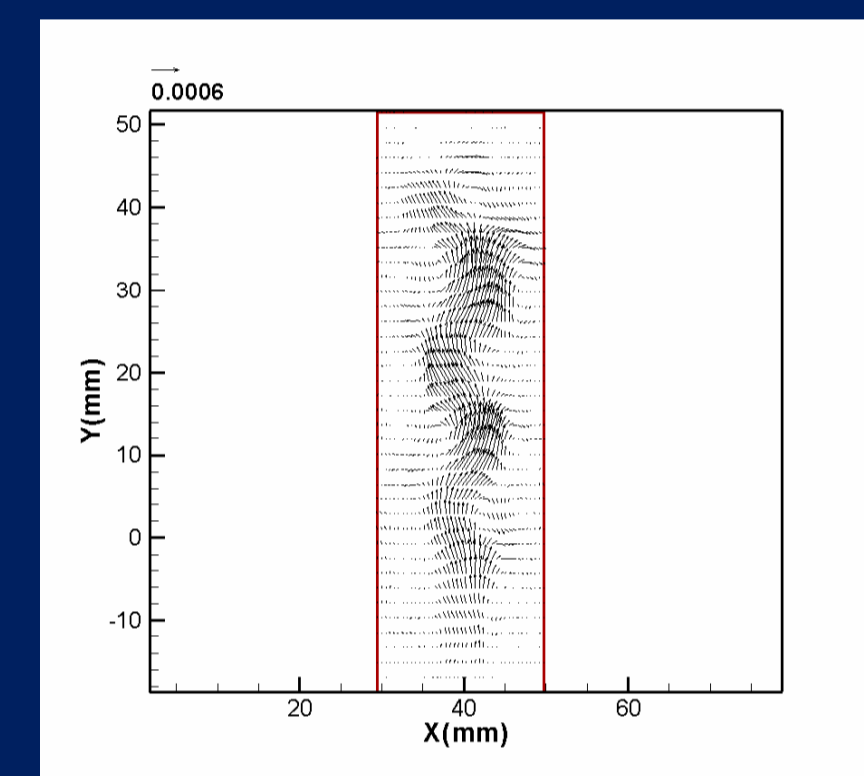
PIV 操作示意圖
Schematic diagram of PIV system



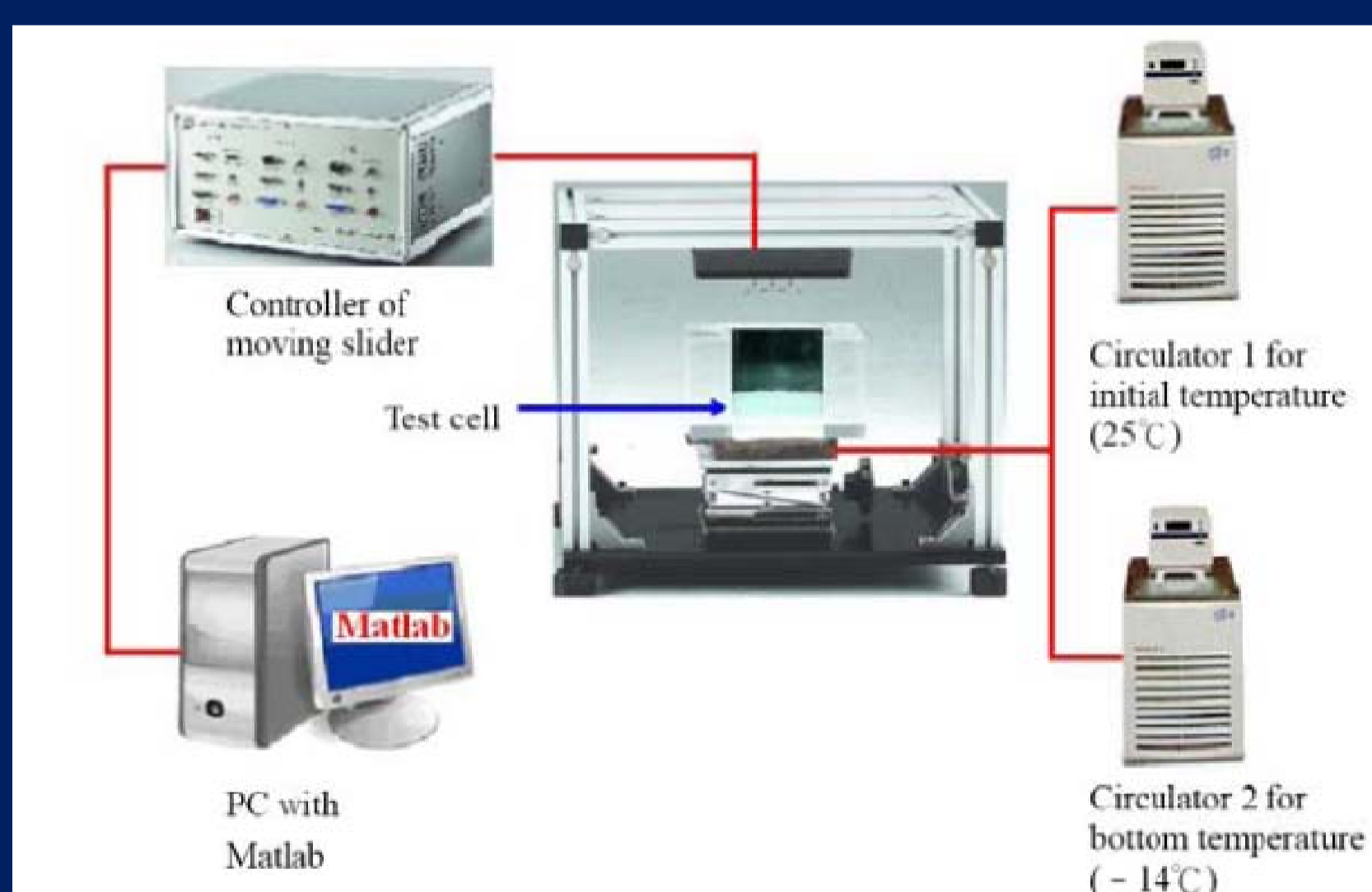
半導體雷射
IR Laser



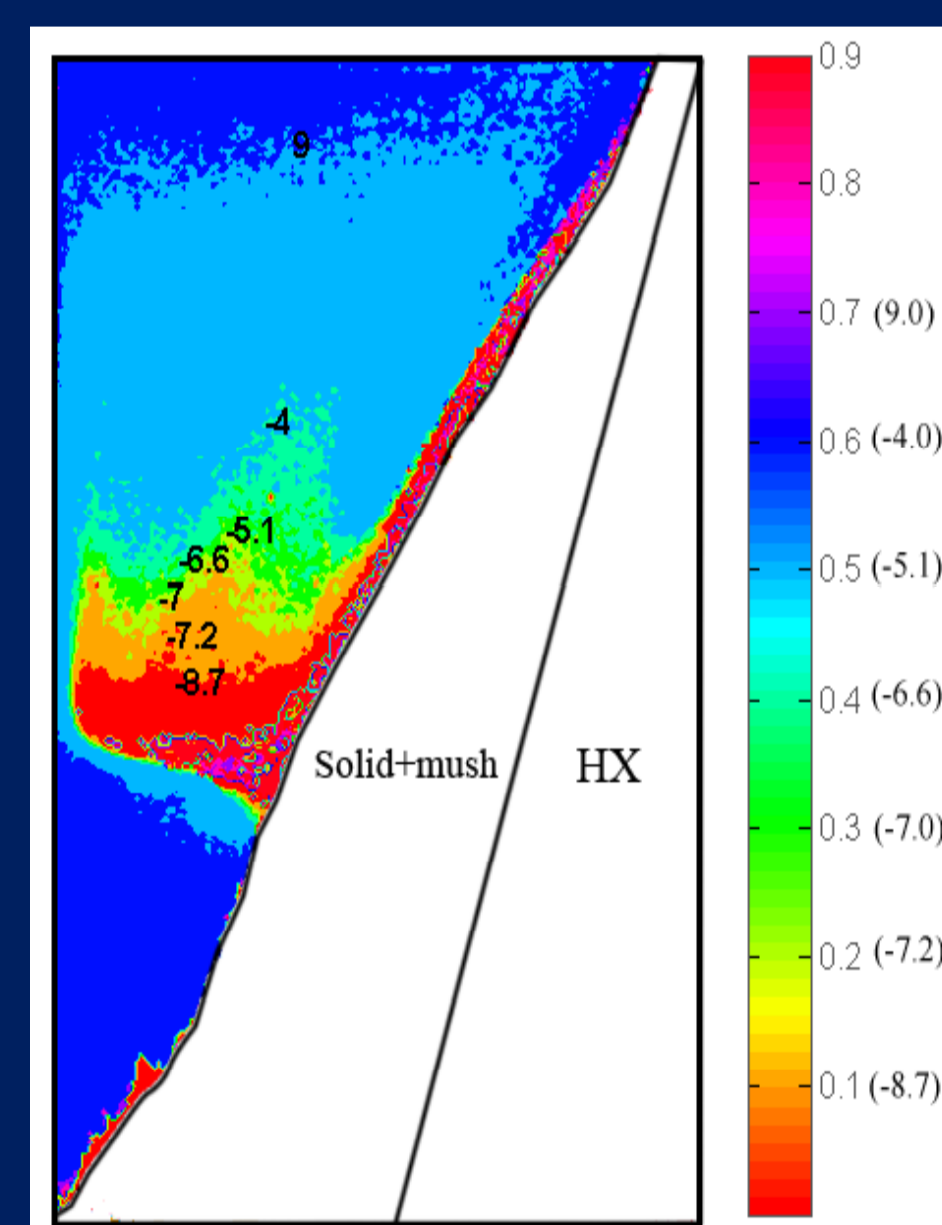
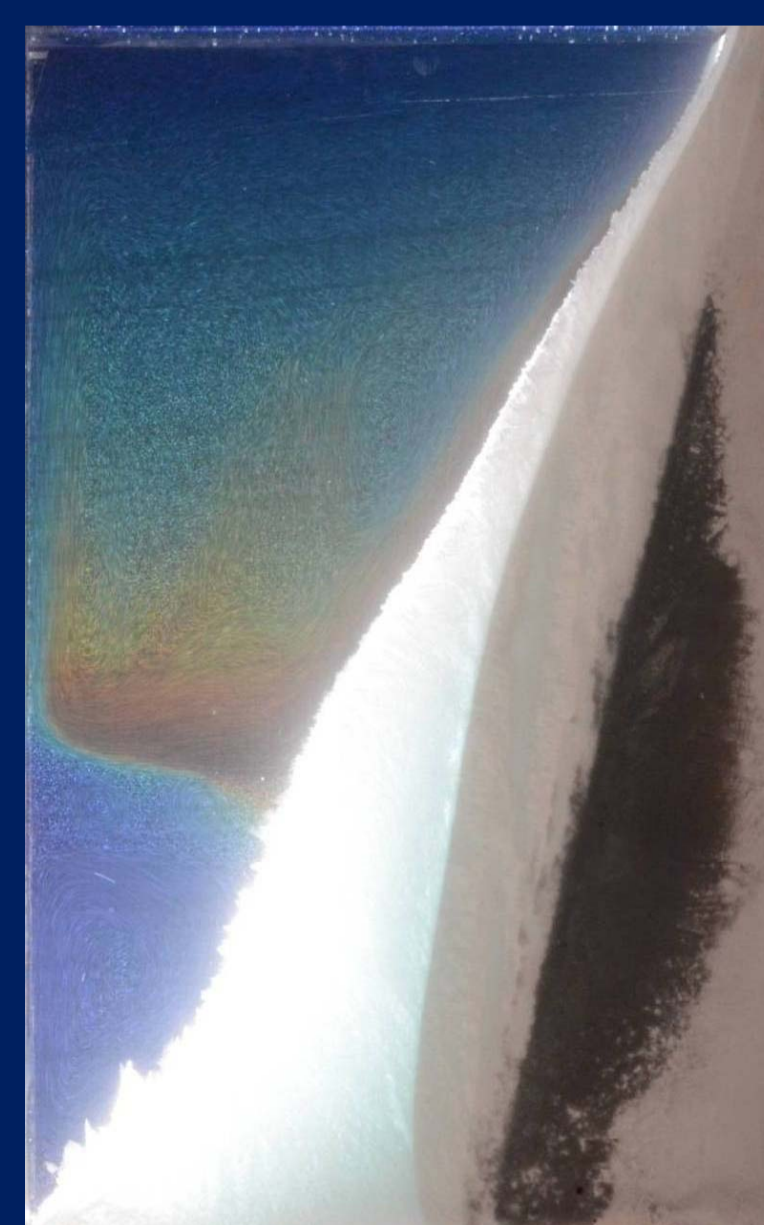
CCD 高速攝影機
CCD high-speed camera



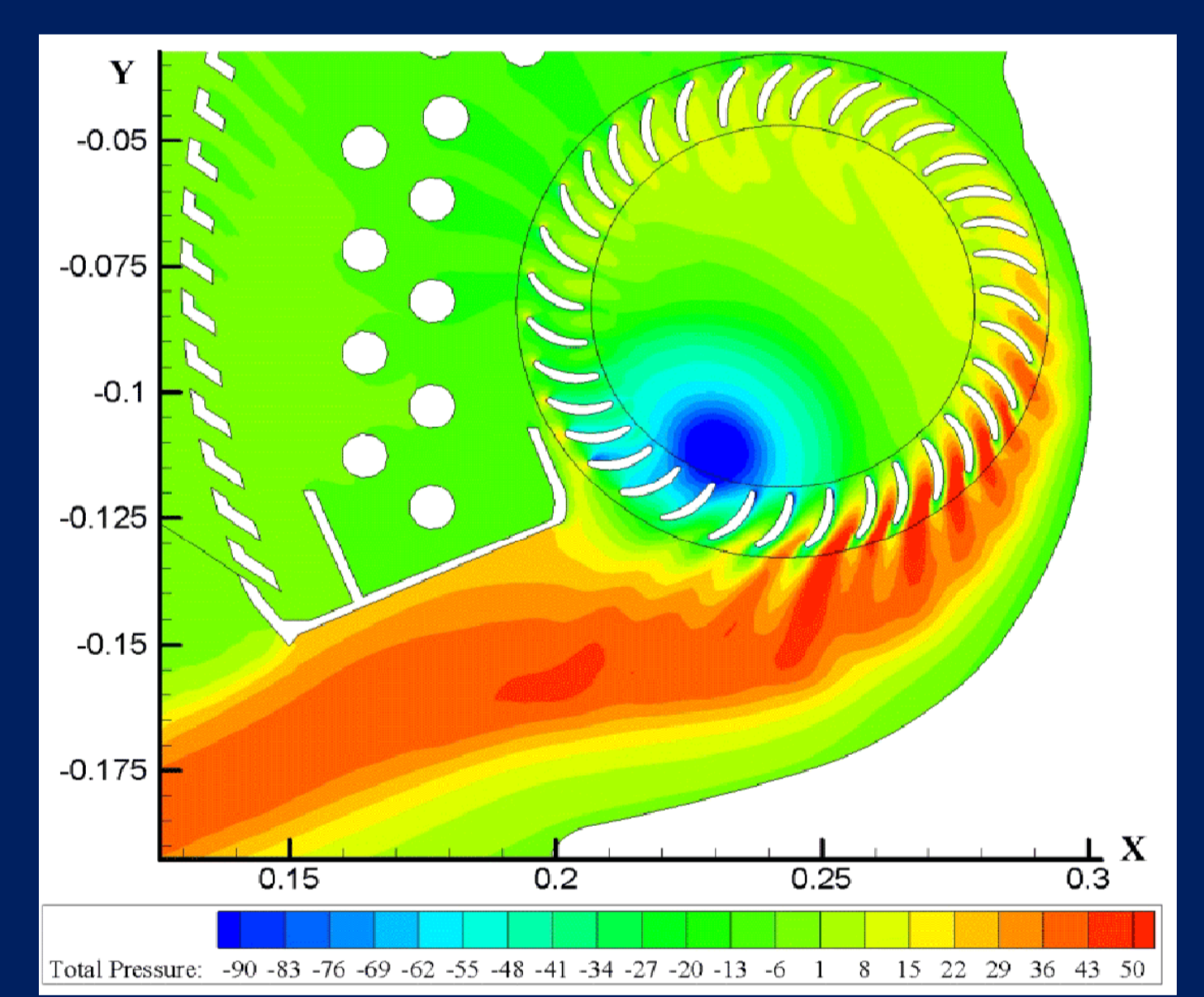
二元溶液凝固過程雙擴散對流流場
Double-diffusive convection during the solidification of a binary solution (PIV measurement)



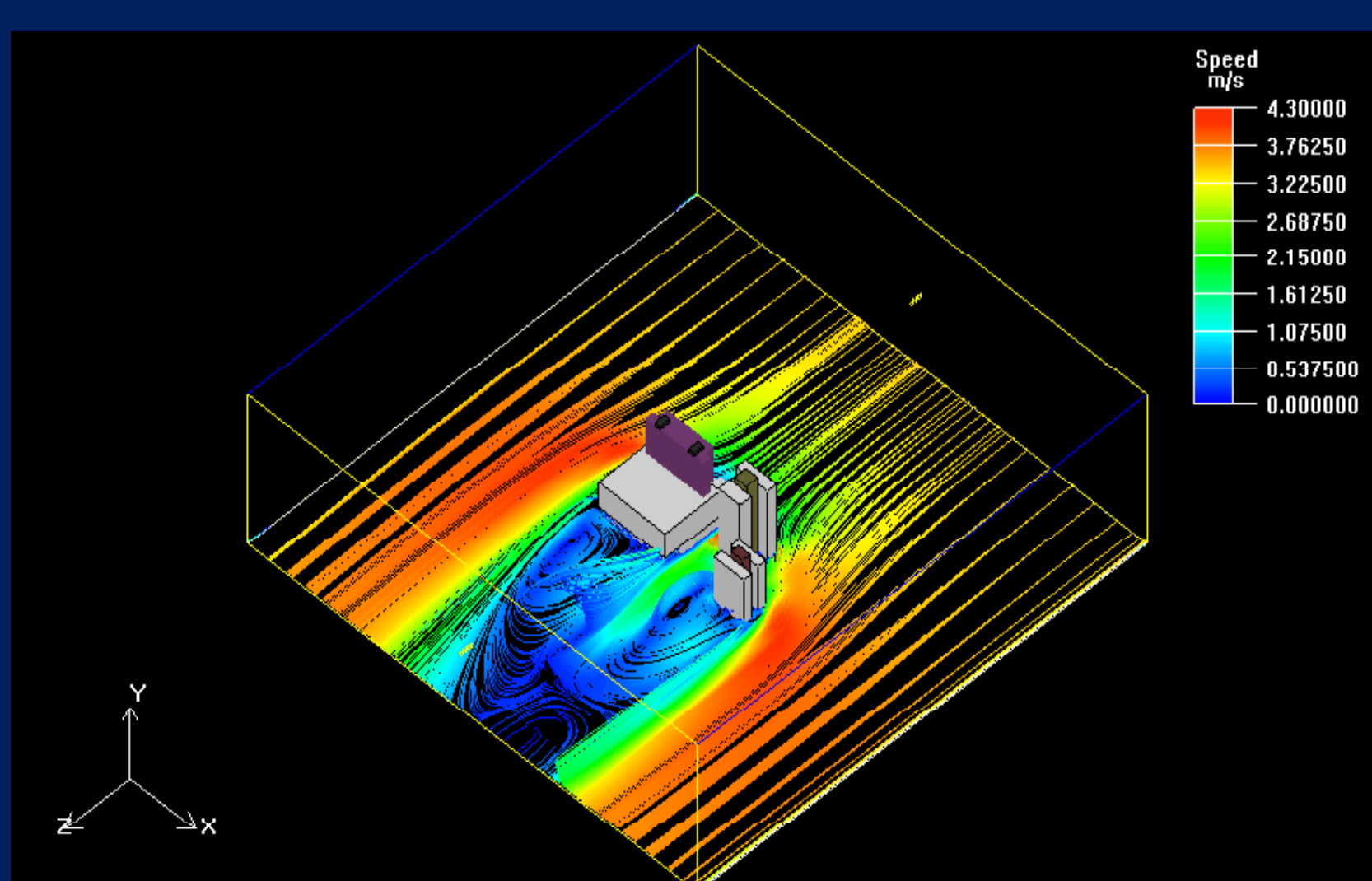
週期性驅動流消除二元溶液凝固過程雙擴散對流設備
Facility for suppressing double-diffusive convection during the solidification of a binary solution by a periodic lid-driven flow



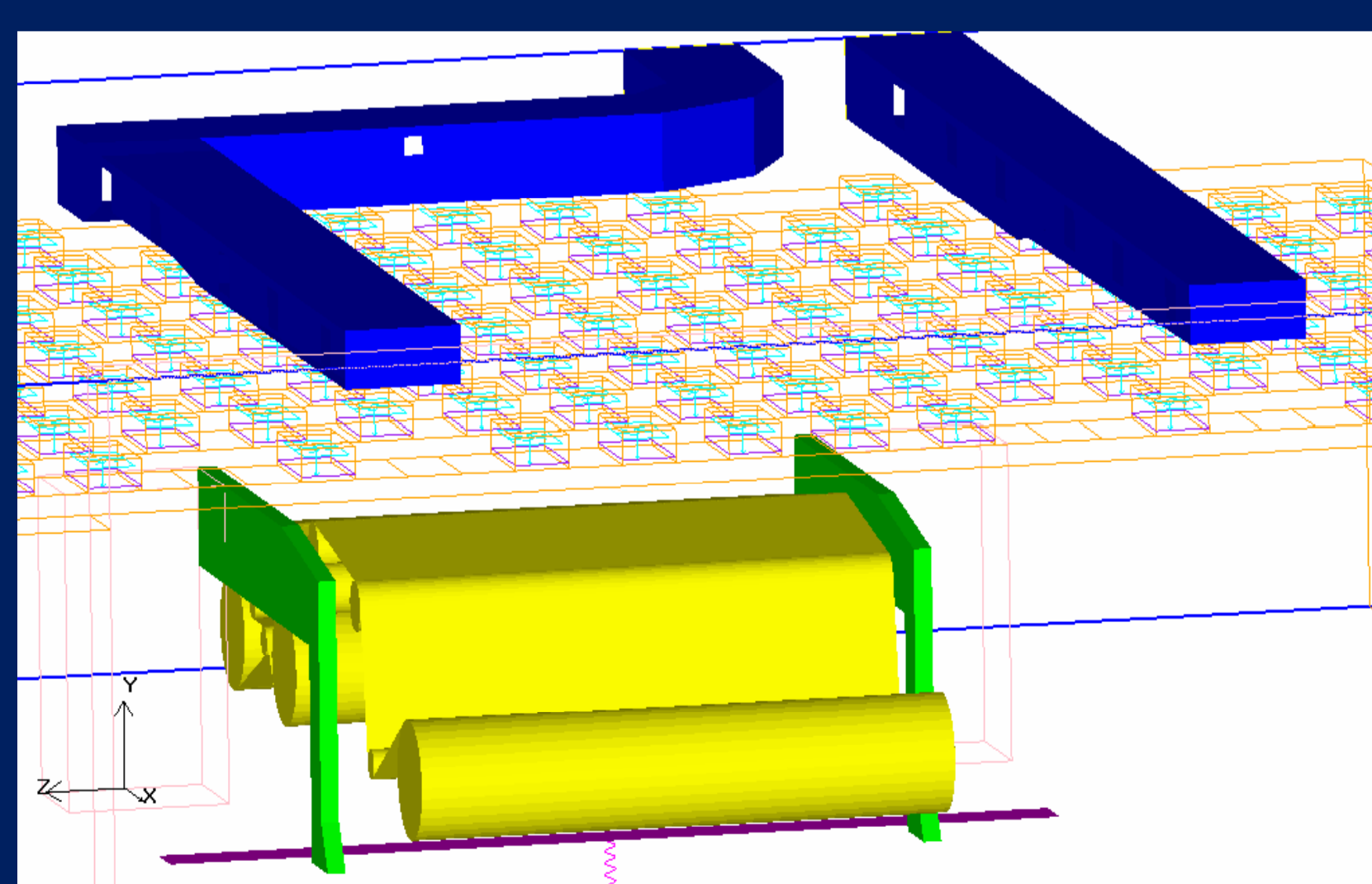
利用暫態液晶法量測二元溶液凝固過程溫度分佈
Temperature distribution by TLC for the solidification of a binary solution



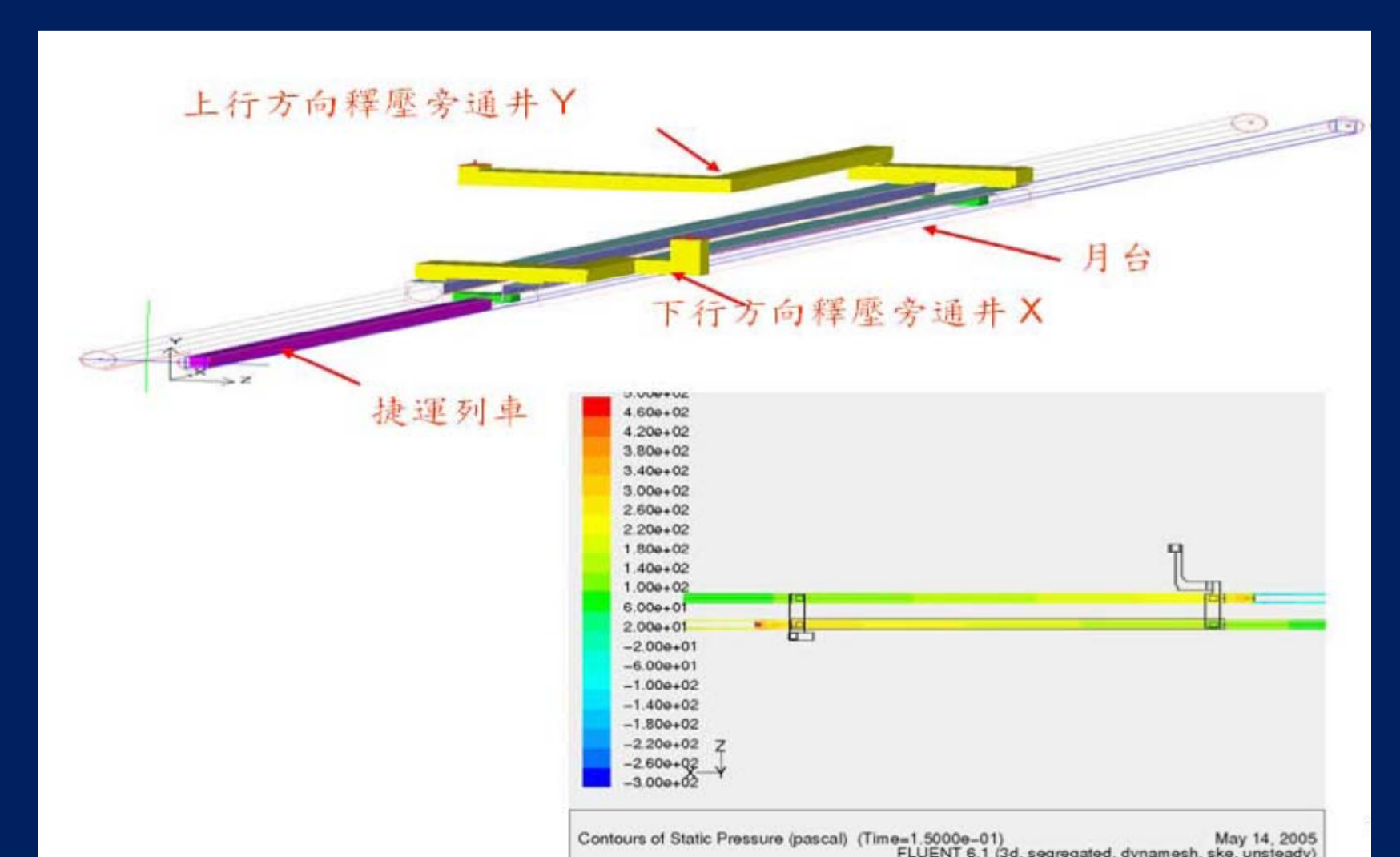
空調室內機氣流模擬分析
Airflow simulation on a split-type air conditioner



建築物風場模擬
Airflow simulation around buildings



潔淨室氣流模擬分析
Airflow simulation within a cleanroom



捷運列車活塞效應模擬
Airflow simulation on an MRT system