

Velocity and Temperature Fields Measurement Using Thermochromic Liquid Crystals

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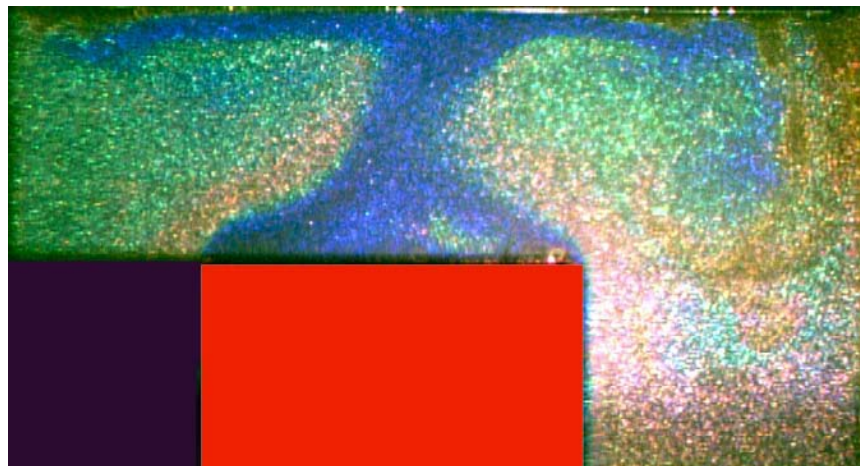


Fig. 1. Flow visualization.

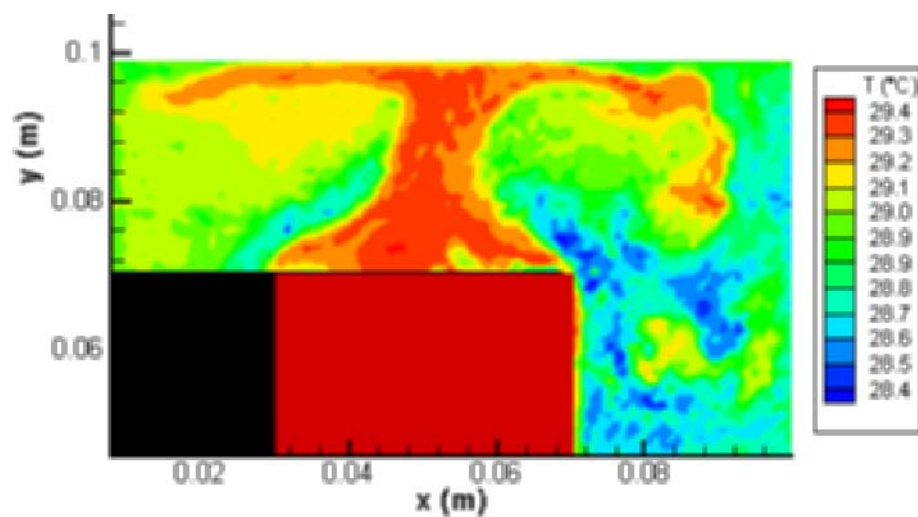


Fig. 2. Temperature field.

Based on a particular property of some liquid crystal to reflect a specific wavelength for a specific temperature, Particle Image Velocimetry and Thermometry (PIVT) is a method allowing to measure simultaneously velocity and temperature fields. The studied flow is seeded with Thermochromic Liquid Crystals (TLC) and illuminated with a white light sheet. In front of this light plane, a CCD color camera records particle images. The color of particles provides the temperature fields whereas, the particle displacement between two images gives the velocity field.