

## **Methods of Experimental Flow Visualization**

- 1.** Dye.
- 2.** Smoke.
- 3.** Hydrogen bubble discharges, points, lines, bands, or patches.
- 4.** Surface powder or flakes.
- 5.** Floating or neutral-density particles.
- 6.** Evaporative coatings on boundary surfaces.
- 7.** Tufts of yarn attached to boundary surfaces.
- 8.** Optical techniques that detect density changes in gas flows: shadowgraph (producing images by casting the flow field shadows on a screen), schlieren (regions of a transparent gas medium that are visible because their densities are different from that of the bulk of the medium), and interferometer (any of several optical instruments that use interference phenomena between a reference wave and an experimental wave or between two parts of an experimental wave to determine wavelengths and wave velocities, measure very small distances and thicknesses, and measure indices of refraction).
- 9.** Luminescent fluids or additives.
- 10.** LDV Techniques (Laser Doppler Velocimetry).
- 11.** LIPA Techniques (Laser Induced Photochemical Anemometry).
- 12.** Photochromic Grid Tracing Techniques.