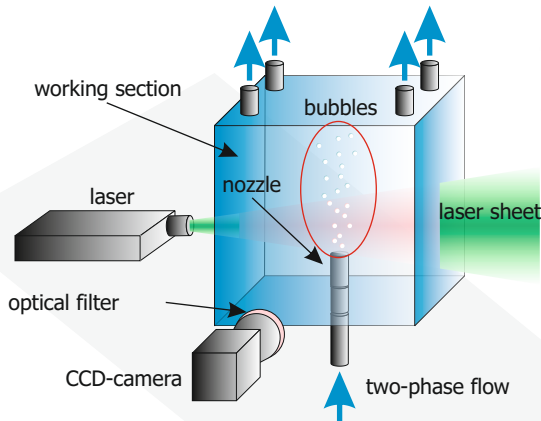


# POLIS: disperse flow measurement system

Planar Fluorescence for Bubble Imaging technique (PFBI) is assigned for measurement of position, size and velocity of spherical bubbles in liquid flow and instantaneous local void fraction. For measurements fluorescent dye is added to fluid, investigated flow plane is illuminated by laser sheet. The layer of fluorophore dissolved in liquid reemits light which is recorded on CCD camera with optical filter. The bubbles located at small distance from the plane section scatter the light and form bright rings on images. The diameter of recorded ring is defined by the diameter of the bubble. Small tracer particles can be added to measure velocity field of the liquid.



## PFBI technique features:

- › non-intrusive technique;
- › measurement of instantaneous position, size and velocity of bubbles and local void fraction;
- › no calibration required;
- › high spatial resolution;
- › can be applied to flows with high void fraction (up to 5%);
- › easy combination with other measurement techniques;
- › one camera is used for measurement of disperse and continuous phase velocities.

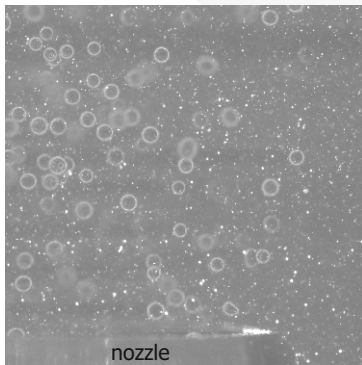
## Applications:

- › investigation of phase interactions in laminar and turbulent bubble flows;
- › investigation of steam and gas cavitation.

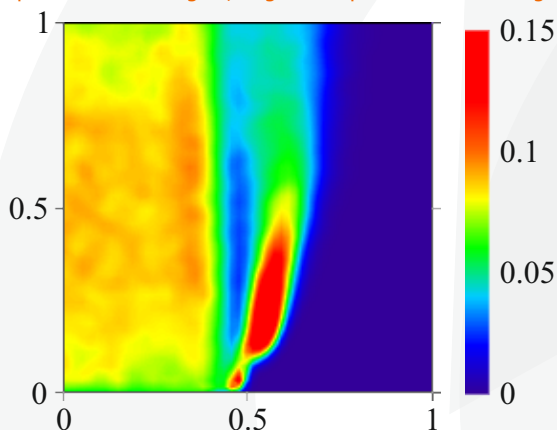
## Measurement system components::

- › Laser with lens for laser sheet formation;
- › CCD camera with lens and optical filter;
- › Fluorescent dye;
- › ActualFlow software with Multiphase Kit;
- › PC;
- › Instruction manual
- › Options:
  - › Tracer particle set for continuous phase velocity measurement using PIV technique;
  - › PIV Kit software;
  - › motorized traversing system

A scheme of experimental setup for PIV/PFBI/PTV measurements



Typical image of bubble jet obtained by PFBI technique: bright points correspond to tracer imagers, rings correspond to bubble images.



Spatial distribution of average gas fraction in free jet near the nozzle:  
 $Re = 12\ 000$ ,  $\beta = 1,2\%$ ,  $D_b = 0,85\ \text{mm}$ .

Questions? Contact with us:  
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