PIV measurements and visualization of the flow of CO_2 near critical conditions inside the channel

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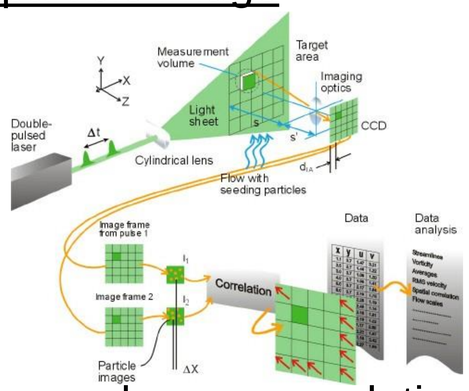
Motivation

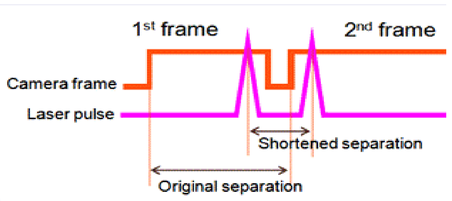
Micro-PIV has extended its ability to measure the velocity of CO_2 at high pressures. The study performs the first kind of experiments with CO_2 fluid and silver-coated hollow glass microsphere PIV particles. The objectives of these experiments are to find the velocity distribution for the flow of CO_2 through a channel.

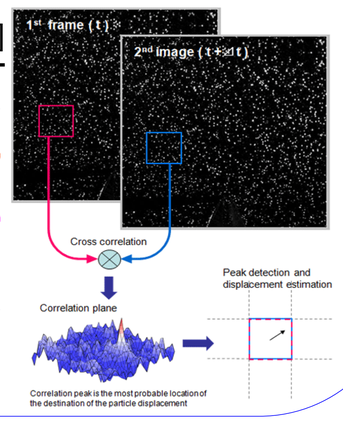
Particle image velocimetry

1. Principle of particle image velocimetry [1]

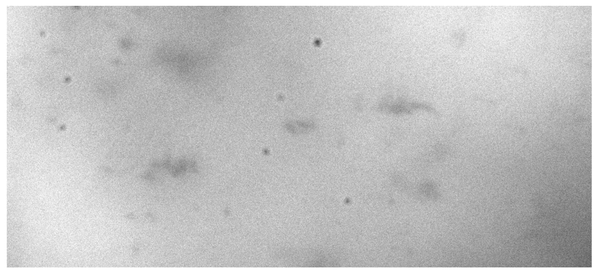


2.Timing images and cross-correlation of raw images in interrogation area [2]

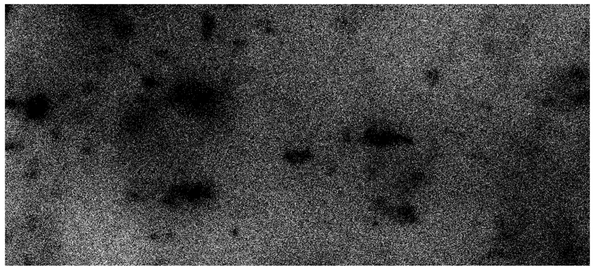




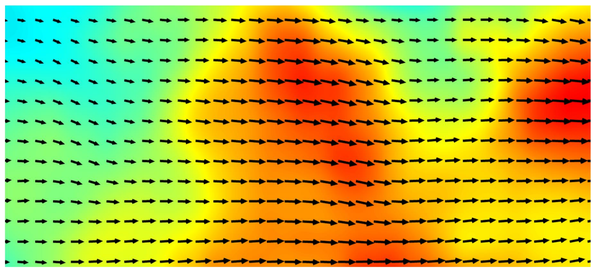
Result



Raw Image



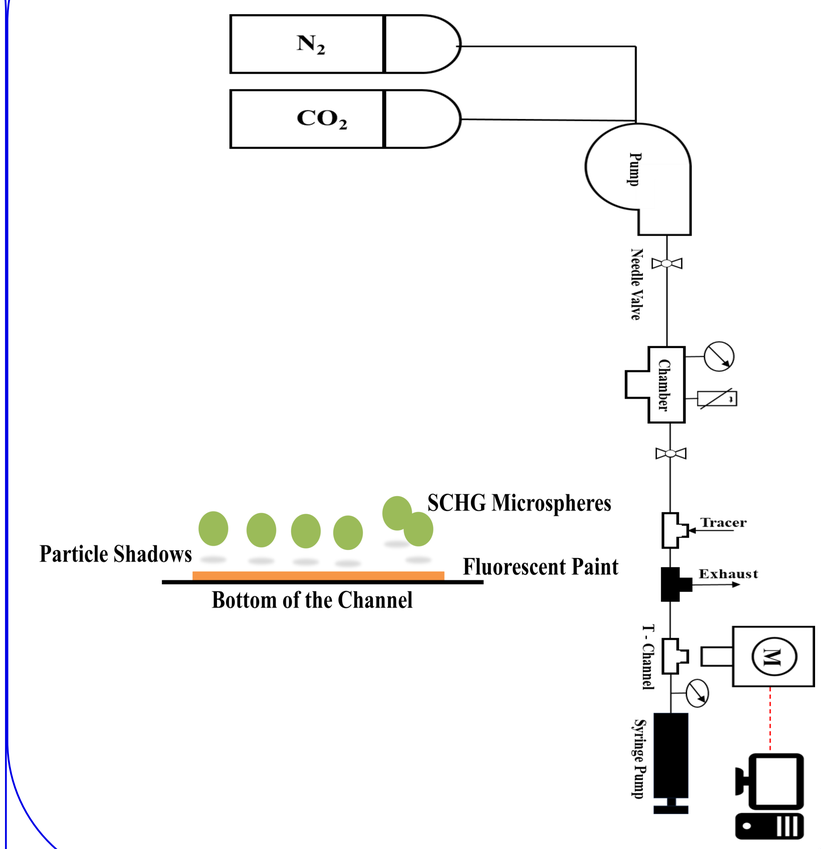
Filtered



SOC Processed

PIV processed results for Silver coated hallow tracers and CO_2

Experimental Setup



Acknowledgments

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REFERANCES

[1] DantecDynamics, 2019, "https://www.dantecdynamics.com/measurement-principles-of-piv."
[2] Seika, 2019, "https://www.seika-di.com/en/measurement/principle_of_piv.htm."