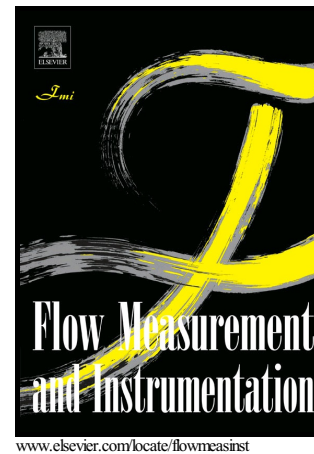


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Use of gas bubbles for ultrasound Doppler flow velocity profile measurement

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Abstract

Ultrasonic velocimetry based on the Doppler shift effect accurately provides quasi-instantaneous flow fields for fluids with a sufficiently high acoustic scattering level. However, ultrasonic velocity instruments are known to perform poorly in clear water with low acoustic scattering level, which are frequent conditions in laboratory applications. This work confirms a technique to solve the problem by seeding the flow with micro hydrogen bubbles, generated by means of electrolysis.

This paper investigates the influence of gas bubbles density on the quality of the ultrasound Doppler based velocity profiles in an open channel flow. The bubbles are generated by electrolysis of water using different magnitudes of electrical current. The estimation of the number of bubbles in the measurement volume confirms that the bubble diameter is similar to

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