



On some aspects of cavitation in holes and tubes

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First I recapitulate results from observations and numerical calculations on acoustic cavitation in small blind and through holes. This work has been done in the framework of the investigation of ultrasound assist for surface plating. The findings comprise wetting of gas-filled blind holes by atomization, and avalanche bubble collapses in such holes. Then I report on investigation of cavitation in submerged flow channels in an ultrasonic bath, intended for flow sono-chemistry. Here, we see bubble nucleation only in a gas-liquid slug flow, namely by unstable gas-liquid interfaces. The process is similar to the wetting of holes where drops are ejected towards the gas and bubbles are entrained into the liquid. Cavitation bubbles then typically occur in localized structures in the tubes, often in form of clusters. Bubble compression ratios are estimated from experimental data, and simulations by numerical cluster models are discussed.

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