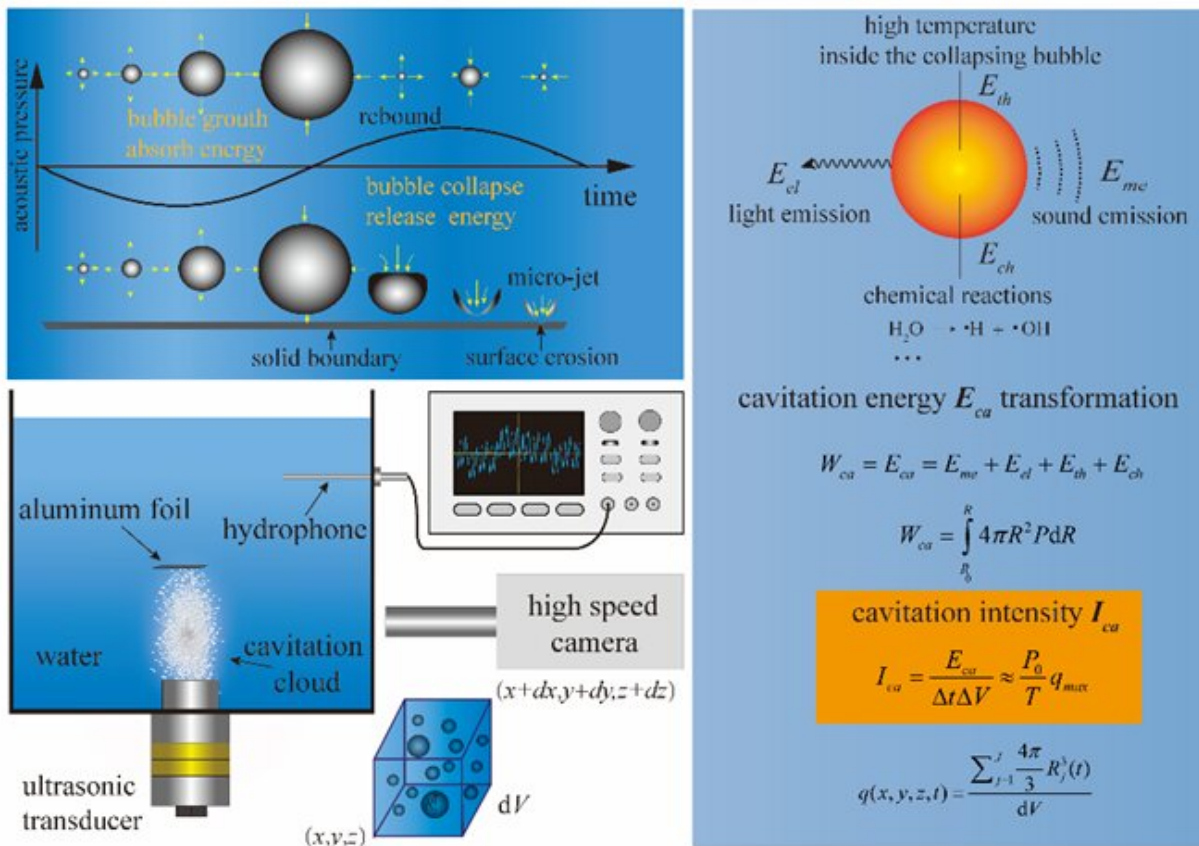


Researchers propose generalized definition of cavitation intensity

June 30 2020, by Li Yuan



The definition of cavitation intensity and its method of measurement. Credit: IACAS

Cavitation usually refers to the generation and subsequent dynamic behaviors of cavities when liquid is exposed to a sufficient pressure

drop. It has been widely used in sonochemistry, biomedicine, environmental science, and other areas.

In recent decades, [cavitation](#) intensity has been used as a self-evident definition characterizing the activity or strength of cavitation. Chemical, acoustic, optical and mechanical methods were developed to measure cavitation intensity.

However, results using different measurement methods could be not be compared with each other. It was therefore necessary to confirm a clear and universal definition of cavitation intensity.

Recently, researchers from the Institute of Acoustics of the Chinese Academy of Sciences (IACAS) proposed a generalized definition of cavitation intensity from the point of view of energy, and derived an appropriate formula to calculate the cavitation intensity.

Cavitation intensity was defined by the power density of cavitation (i.e., the cavitation energy in unit time and unit space). The researchers found that the cavitation intensity could be characterized by q , namely the state variable of cavitation, which denotes the instantaneous ratio of the volume of space occupied by cavitation bubbles.

The influencing factors of cavitation intensity were intricately related to the surrounding liquid environment, ultrasonic frequency and pressure, bubble size, and so on. Therefore, in the fixed liquid environment and bubble nuclei condition with certain sound [pressure](#) amplitude, a specific ultrasonic frequency might maximize the cavitation [intensity](#).

More information: Pengfei Wu et al. On the definition of cavitation intensity, *Ultrasonics Sonochemistry* (2020). [DOI: 10.1016/j.ultsonch.2020.105141](#)

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