

多相流和计算流体力学

## 几何尺寸对音波振荡器射流流动特征的影响

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**摘要** 音波振荡器内射流流动特征主要由振荡器几何尺寸决定, 因此对几何尺寸对流动特征的影响进行了实验和数值模拟研究, 得到: (1) 射流振荡周期和控制管长呈正比, 与声波在管中传播周期近似相等; (2) 控制管过长、过宽或过窄, 均不能产生稳定振荡射流, 音波振荡器正常工作时的控制管长范围随控制通道变窄而缩小; (3) 劈距或位差过小, 射流均不能附壁, 且两者之间存在耦合关系, 劈距减小, 则产生振荡射流的最小位差增大。

**关键词** [音波振荡器](#) [射流](#) [流动特征](#) [几何尺寸](#)

分类号

## Effects of geometrical size on flow characteristics of jet in sonic oscillator

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### Abstract

The flow characteristics of the jet in a sonic oscillator are mainly determined by its geometrical size. The effects of geometrical size were studied by experiments and numerical simulation. The conclusions were as follows: (1) The switch cycle of the jet was proportional to the controlling tube length and approximately equal to the time that sonic wave passed through the controlling tube; (2) When the controlling tube was too long, too wide or too narrow, the jet would not oscillate. The range of the controlling tube length which caused jet oscillation became smaller with narrowing controlling tube; (3) If the wall-offset or wedge-distance was too small, the jet could not attach the wall. In addition, their effects were correlative. When the wedge became nearer to the nozzle, the smallest wall-offset that could induce jet oscillation increased.

**Key words** [sonic oscillator](#) [jet](#) [flow characteristic](#) [geometrical size](#)

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