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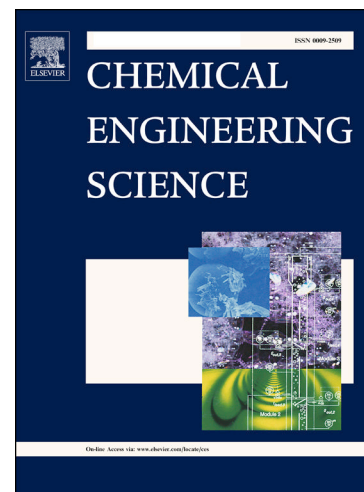
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Online bubble size analysis in micro flotation

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Abstract

Measuring the size of bubbles is of fundamental interest in process engineering, especially in flotation. The size of a bubble influences its rising velocity, coalescence tendency and interaction with particles and surrounding liquid. This paper presents an online Bubble Size Analyzer (BSA) with automated image analysis software. The importance of isokinetic sampling with short residence time in the sampling system is shown. Key parameters of the image analysis software are pointed out. The BSA was used to characterize a laboratory dissolved air flotation setup. In accordance with literature, bubble size reduction with increasing saturation pressure and recycle flow was measured. It was discovered that bubble generation in the flotation setup happened by classical dissolved air flotation only when it was operated with pure water. With sodium chloride saline and complex protein solution a mixed dispersed/dissolved air flotation was observed. Maximum bubble sizes were found in water, reduced sizes in saline and minimum size in protein solution. Due to its flexible online installation, the BSA is recommended as a suitable tool for bubble size measurements in laboratory and real processes, where inline analysis is not possible.

Keywords:

Dissolved Air Flotation; Dispersed Air Flotation, microbubbles, bubble size, image analysis, online

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