



Application of digital image analysis for size distribution measurements of microbubbles

Abstract

This work employs digital image analysis to measure the size distribution of microbubbles generated by the process of electroflotation for use in solid/liquid separation processes. Microbubbles are used for separations in the mineral processing industry and also in the treatment of potable water and wastewater. As the bubbles move upward in a solid/liquid column due to buoyancy, particles collide with and attach to the bubbles and are carried to the surface of the column where they are removed by skimming. The removal efficiency of solids is strongly affected by the size of the bubbles. In general, higher separation is achieved by a smaller bubble size. The primary focus of this study was to characterize the size and size distribution of bubbles generated in electroflotation using image analysis. The study found that bubble diameter increased slightly as the current density applied to the system was increased. Additionally, electroflotation produces a uniform bubble size with narrow distribution which optimizes the removal of fine particles from solution.

Authors:

Burns, S E; Yiacoymi, S; Frost, D ^[1]; Tsouris, C ^[2]

1. Georgia Inst. of Tech., Atlanta, GA (United States). School of Civil and Environmental Engineering
2. Oak Ridge National Lab., TN (United States). Chemical Technology Div.

Publication Date:

1997-03-01

Research Org.:

Oak Ridge National Lab., TN (United States)

Sponsoring Org.:

USDOE Office of Energy Research, Washington, DC (United States)

Tennant Company

Report Number(s):
CONF-970583-1
ON: DE97003088; TRN: AHC29709%%83

DOE Contract Number:
AC05-96OR22464

Resource Type:
Technical Report

Resource Relation:
Conference: Imaging technologies: techniques and civil engineering applications,
Davos (Switzerland), 25-30 May 1997; Other Information: PBD: [1997]

Country of Publication:
United States

Language:
English


Subject:
32 ENERGY CONSERVATION, CONSUMPTION, AND UTILIZATION; BUBBLES;
FLOTATION; IMAGE PROCESSING; USES; WASTE PROCESSING; WATER
TREATMENT; SIZE; ELECTROLYSIS; EXPERIMENTAL DATA; SPATIAL
DISTRIBUTION; CURRENT DENSITY; BUBBLE GROWTH; MINERAL INDUSTRY

TECHNICAL REPORT:

 [View Technical Report \(0.56 MB\)](#)

DOI: [10.2172/463646](#)

SAVE / SHARE:

[Export Metadata](#) 
[Save to My Library](#)



