

A composite image analysis system for the determination of size distribution in densely dispersed bubbles/drops

Xenophon Zabulis^{1,2}, Maria Papara¹ and Thodoris D. Karapantsios^{1,*}

¹ Division of Chemical Technology, School of Chemistry, Aristotelian University of Thessaloniki, University Box 116, 54124 Thessaloniki, Greece

² Informatics and Telematics Institute, Centre for Research and Technology Hellas, 1st Km Thermi-Panorama Road, 57001 Thessaloniki, Greece

A single-camera measurement system is introduced that features a template-based bubble/drop detection method. The system tackles the problems that are encountered when conventional methods are utilized in dense dispersions. The, poor performance of such conventional approaches is reviewed and it is explained why the proposed system exhibits greater robustness in the same conditions. Besides templates, the proposed approach utilizes an image scale-space to detect bubbles/drops independently of their size. Furthermore, algorithmic optimizations for the proposed approach that target the reduction of computational complexity and user-intervention are proposed and compiled into a software application. This software is then tested for the determination of size distribution in images of a wet foam, an emulsion and a dense bubble dispersion.

*: presenting author: E-mail: karapant@chem.auth.gr, Phone: 0030 2310 997772, Fax: 0030 2310 997759

Preference: Poster presentation

Topic: 4) Interfaces