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Introduction

There are continuing and growing needs for techniques to determine the behaviors and characteristics of particles and the developments of nano-materials in science, engineering, medicine, human-environment, and leading industries. Optical methods are the most powerful tools, and they are capable of rapid on-line and in-situ measurement of various sizes of particles and their behaviors from molecular clusters to raindrops.

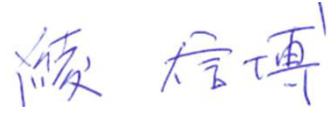
The International Conference on Optical Particle Characterization (OPC 2014) was held 10–14 March 2014 at the AIST Tokyo Waterfront, Tokyo, Japan, in order to discuss not only the optical measurement of particle concentration, size, shape, structure, and composition in various phases, but also the optical handling of particulate matter with the traditional and novel methods. It was the 10th international scientific conference which aims to contribute to development of the whole science and technology on the particle characterization with light, succeeding the basic principle of the previous successful series of conferences on OPC (and OPS = Optical Particle Sizing—the former name of the conference series) since 1987.

Forty-six oral presentations were accepted and made in 15 sessions at OPC 2014. Five invited lectures were given by the following leading scientists who were recommended by the international advisory committee and the program committee of OPC2014, viz., Dr. W. Bachalo, Atrium Technologies Inc. (United States), Prof. F. Scheffold, University of Fribourg (Switzerland), Prof. M. Shibayama, The University of Tokyo (Japan), Prof. P. Wagner, University of Vienna (Austria), and Prof. Y. Zhang, Shanghai Jiao Tong University (China). Also, Dr. D. Koltsov, BREC Solutions Ltd. (United Kingdom), gave a special lecture titled “Nanomaterials and fine bubbles standardisation and regulation” at the joint workshop of OPC2014, AIST, and FBIA (Fine Bubble Industry Association) held on the opening day of OPC2014.

Very fruitful discussions were made at OPC 2014. The conference program covered theoretical and experimental works, pertaining to the fundamentals of optical particle sizing and characterization, as well as its scientific, technological, and industrial applications.

In this proceeding volume, 36 original papers are published from among the studies presented at OPC 2014 after a post-conference peer reviewing process

coordinated by the scientists on each field including the chairs of the sessions and the committee members. Two of the invited papers are also included.

Handwritten signature of Nobuhiro Aya in blue ink, consisting of the characters '綾' and '博'.

Nobuhiro Aya