

Introduction

Ten years ago the sizing of liquid particles in sprays was confined to a handful of research and development laboratories. Since that time there has been a veritable explosion in the number of measurement methods proposed. Some of these methods have been developed into commercially available instruments which sell at costs of tens of thousands of dollars. Furthermore, drop-size measurement has moved from the realm of research into process and quality control for such diverse application areas as agriculture, spray drying, and gas turbine manufacturing. The associated investment in money, manpower, and facilities has become very extensive and continues to grow.

In a technological sense, ten years represents a very short period of time. The drop sizing practices which have been adopted are relatively untried with respect to requirements such as accuracy and limitations on use. The major theme of this symposium is that the progression from a method to size individual particles based on well understood physical principles to the characterization of a spray is neither straightforward nor simple. Since 1976 ASTM Subcommittee E29.04 has been engaged in formulating definitions and procedures for the characterization of liquid particles, including the sizing of droplets in sprays. We encourage interested individuals and organizations to become involved in our activities. This symposium provides a benchmark for the current capabilities and limitations of techniques for sizing liquid particles. In particular, the five invited survey papers, by Drs. Bachalo, Chigier, Hirtleman and Thompson, and Mr. Simmons, offer unique, comprehensive introductions to the techniques for and applications of liquid particle sizing.

The papers which follow have been divided into five subject areas: introductory topics; particle sizing by optical, nonimaging techniques; particle sizing with imaging techniques; and nonoptical liquid particle sizing and closure. Reader comments on this symposium and topics for future symposia are welcome.

Julian M. Tishkoff

Air Force Office of Scientific Research, Bolling
Air Force Base, Washington, DC 20332;
symposium cochairman and coeditor.