PARTICLES IN GASES AND LIQUIDS 3

Detection, Characterization, and Control

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Edited by

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PREFACE

This book documents the proceedings of the Third Symposium on Particles in Gases and Liquids: Detection, Characterization and Control held as a part of the 22nd Annual Meeting of the Fine Particle Society in San Jose, California, July 29-August 2, 1991. This series of symposia was initiated in 1987 in light of the growing importance to eliminate particles from process gases and liquids.

As pointed out in the Preface to antecedent volumes in this series that particles in process gases and liquids could cause significant yield losses in precision manufacturing and concomitantly there has been heightened interest in understanding the behavior of particles in gases and liquids and devising ways to eliminate, or at least reduce substantially, these particles. The concern about particles in gases and liquids has been there for quite some time in the microelectronics arena, but there are other areas also where particles are of significant concern, e.g. in operation theatres in hospitals, food and beverage industry, and pharmaceutical manufacturing.

This symposium basically had the same objectives as its predecessors, but to provide an update on the R&D activity taking place in the arena of particle detection, characterization and control. The printed program comprised a total of 28 papers dealing with variegated aspects of particles in gases and liquids. There were brisk and lively discussions and the attendees offered many positive comments, which goes to show that it was a well-received and needed symposium.

Before commenting on the present volume, it should be recorded that all manuscripts were rigorously peer reviewed, and most of these were substantially revised before inclusion in this volume. So this volume comprises a set of papers which have passed peer scrutiny, and not just a bunch of "as-received" manuscripts.

The present volume contains 18 papers and the topics covered include: aerosol transport in turbulent flows; deposition of submicrometer particles on surfaces; testing philosophy for UHP gas handling components; particle measurement in process gas stream; filter and filtration efficiency; design of cleanroom airflows using CFD analysis; cosmetics as a potential source of particulate contamination in the cleanroom; particle release from cleanroom operators; particle contamination in plasma processing; characterization and monitoring of particles in pharmaceutical manufacturing; monitoring particles in liquids; and Marangoni drying.

I certainly hope that this and earlier volumes^{1,2} in this series will serve as a fountain of information on detection, characterization and control of particles in gases and liquids.

Acknowledgments: First, thanks are due to the Fine Particle Society for sponsoring this event. I am thankful to the appropriate management of IBM Corporation for permitting me to organize this symposium and to edit this volume. The reviewers provided many useful comments and I extend my special thanks to them for their time and efforts. Also I would like to express my appreciation to my wife, Usha, for providing help and support in more ways than one. Finally, this book would not have seen the light of day without the support, interest and contribution of the authors; and I extend my appreciation and thanks to them.

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