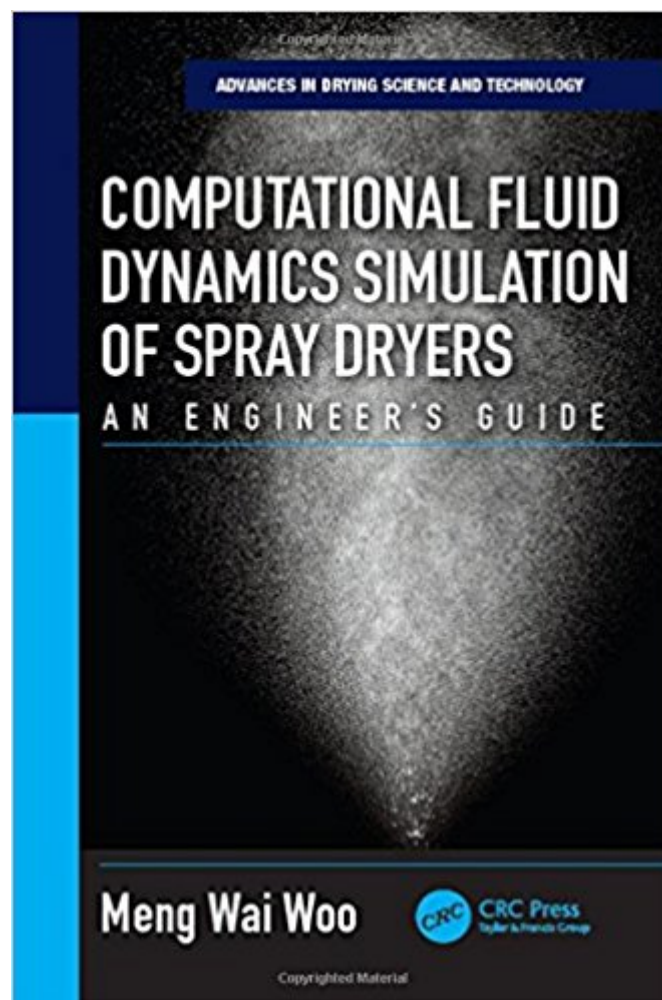




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Computational Fluid Dynamics Simulation Of Spray Dryers: An Engineerâ€™s Guide (Advances In Drying Science And Technology)



Synopsis

Bridging the gap in understanding between the spray drying industry and the numerical modeler on spray drying, *Computational Fluid Dynamics Simulation of Spray Dryers: An Engineer's Guide* shows how to numerically capture important physical phenomena within a spray drying process using the CFD technique. It includes numerical strategies to effectively describe these phenomena, which are collated from research work and CFD industrial consultation, in particular to the dairy industry. Along with showing how to set up models, the book helps readers identify the capabilities and uncertainties of the CFD technique for spray drying. After briefly covering the basics of CFD, the book discusses airflow modeling, atomization and particle tracking, droplet drying, quality modeling, agglomeration and wall deposition modeling, and simulation validation techniques. The book also answers questions related to common challenges in industrial applications.

Book Information

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"A friendly text that has provided just enough description of the subject for readers to go on carrying out analysis using Computational Fluid Dynamics with a certain degree of confidence, and that has given sufficient details on the practical examples that have been exercised before (mostly by the author himself). The experiences shared are highly illustrative. One should also appreciate the author's enthusiasm about Computational Fluid Dynamics applications on spray drying, which is well known in the drying community. • Xiao Dong Chen, Soochow University, Suzhou, Jiangsu,

China " A comprehensive analysis of spray drying processes oriented to CFD modeling of air flow, droplet drying and quality issues." • Ireneusz Zbicinski, Lodz University of Technology, Poland

Meng Wai Woo is currently a senior lecturer of chemical engineering at Monash University, Australia. His research interest is in spray drying. He has experience in computational fluid dynamics (CFD) analysis of the spray drying process and in applying this technique for industry. Within the area of spray drying, he is also examining the droplet evaporation, particle formation or interaction phenomena and in engineering the functionality of particles. Dr. Woo also explores new approaches to spray drying in introducing the antisolvent vapor precipitation approach and most recently, the narrow tube spray drying technique.

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