



CIRCULATING FLUIDIZED BED TECHNOLOGY V

Proceedings of the Fifth International Conference
on Circulating Fluidized Beds

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PREFACE

The Fifth International Conference on Circulating Fluidized Beds, CFB-5, was held at Fragrant Hill Hotel in Beijing, May 28 ~ 31, 1996. 189 delegates from 26 countries attended this conference, and 141 papers were presented orally in parallel sessions. Altogether 4 workshops were organized for discussing the significant problems in this field. For promoting cooperation between academia and industries, two mini-receptions were financed by Foster Wheeler Energy International, Inc., and Particulate Solid Research, Inc. A CFB-equipment exhibition was also organized. Three invited plenary lectures overviewed the prominent topics in CFB research and development.

At the beginning, altogether 181 abstracts were submitted to the conference, which were extensively reviewed by members of the Advisory Board, and out of which 141 were accepted for oral presentation for 20 minutes each. On-site review was carried out for all papers by session chairmen, and a follow-up review was then made by members of the Advisory Board and the Organizing Committee who attended the conference. From these three stages of reviewing, 100 papers were finally accepted for publication in these proceedings. All these papers are published in their original form.

Papers included in this volume represent a wide range of subjects in the CFB field, characterized not only by appropriate balance between fundamentals and applications, but also by multiple sources from academia and industry. Paper categories and their corresponding numbers are shown below:

		<u>accepted abstracts</u>	<u>Preprints</u>	<u>Proceedings</u>
<i>DB</i>	<i>Dynamic Behavior</i>	23	20	15
<i>DGS</i>	<i>Dynamics: Gas/Solid</i>	25	23	17
<i>DT</i>	<i>Dynamics: Theory</i>	8	7	5
<i>CG</i>	<i>Combustor/Gasifier/Boiler</i>	18	11	5
<i>CS</i>	<i>Combustor Studies</i>	14	9	4
<i>CSNA</i>	<i>Combustor: Sulfur/Nitrogen/Ash</i>	9	7	5
<i>Pr</i>	<i>Processes</i>	20	13	11
<i>MSD</i>	<i>Modeling/Simulation: Dynamics</i>	8	7	4
<i>MSS</i>	<i>Modeling/Simulation: Reactions</i>	12	9	7
<i>MSS</i>	<i>Modeling/Simulation: Riser</i>	7	7	6
<i>HM</i>	<i>Heat/Mass Transfer</i>	11	9	6
<i>Eq</i>	<i>Equipment</i>	17	15	10
<i>MI</i>	<i>Measurement/Instrument</i>	9	9	5
		----- 181	----- 146	----- 100

Fluid dynamics and coal combustion are still the two major subjects for CFB research and development: three eighth involving fluid dynamics, and one fifth, coal combustion. Doubtless, complex two-phase flow, characterized by dynamic heterogeneous structures, received considerable attention due to its pervasive effect on all CFB processes. Compared to previous conferences of this series, more consideration was paid to local flow structure and solid mixing, since it is now well known that global parameters are insufficient to simulate CFB systems, particularly when dealing with transfer and reaction between solids and fluid. CFB coal combustion is a rapidly developing technology due to its superiority in reducing NO_x and SO₂ emissions.

Emission control in combustion received added attention since it is far from being well understood due to its strong dependence not only on operating conditions but also on configurations of the combustor. It may be expected that scale-up as well as emission control of CFB boilers will attract even more attention in the future. In addition to boilers and FCC processes, other applications of CFB and their simulation were also explored extensively at CFB-5.

CFB-5 awards were conferred upon Prof. Lothar Reh and Prof. A. M. Squires in recognition of their distinguished contributions to CFB technology. The final program of the conference, opening addresses and minutes of the Advisory Board Meeting are also included in these proceedings in a special section, "Conference Information".

The success of CFB-5 is due to the efforts of many participating individuals and organizations. The Chinese Society of Particuology and the Institute of Chemical Metallurgy jointly hosted the conference under the guidance of the Advisory Board and with the great help of the Secretariat of the International Conference on CFB. Other organizations sponsoring the conference with enthusiasm are: National Natural Science Foundation of China, Chinese Academy of Sciences, China Petrochemical Corporation, Foster Wheeler Energy International, Inc. and LLB Lurgi Lentjes Babcock Energietechnik GmbH. Their contributions made it possible to keep conference fees low and to provide assistance to certain participants to attend the conference.

We wish to express our gratitude to all members of the Advisory Board and the Local Organizing Committee. Special thanks are due to Prof. P. Basu for his role as the convenor of the Board, to Dr. A. A. Avidan and Dr. W. C. Yang for their help in looking for financial support, to Prof. J. F. Large and Prof. M. Hasatani for contributing their experiences in organizing previous conferences. Particular thanks are due to Prof. Yusheng Xie and Hongzhong Li, director and deputy director of the Institute of Chemical Metallurgy, for their significant support to the organization work, and to Prof. Shujuan Liu, Peiyun Wang, Youchu Li, Zhuyou Cao, Manjun Shao, Jianzhong Yao and Baolin Luo for tending the many details of the conference including site selection and reception at Beijing Airport.

We highly appreciate the efforts of Ms. Wenlin Jia, Ms. Jie Yuan and Ms. Aihua Chen, who helped us in editing the preprints and the proceedings. We also wish to thank other colleagues at the Institute of Chemical Metallurgy for their help in one way or another during the three-year preparation of the conference.

Last, but not in the least, we gratefully acknowledge the contributions of all session chairmen and guest speakers.

We hope this volume will provide useful information for future research and development of CFB technology. We now look forward to a successful CFB-6, which is being organized by Prof. J. Werther of Technical University of Hamburg-Harburg and Prof. O. Molerus of University of Erlangen-Nürnberg, to be held in August, 1999, in Würzburg, Germany.

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