

CFB 14

14th International Conference on Circulating Fluidized Bed Technology

July 21-24, 2024 Taiyuan-China

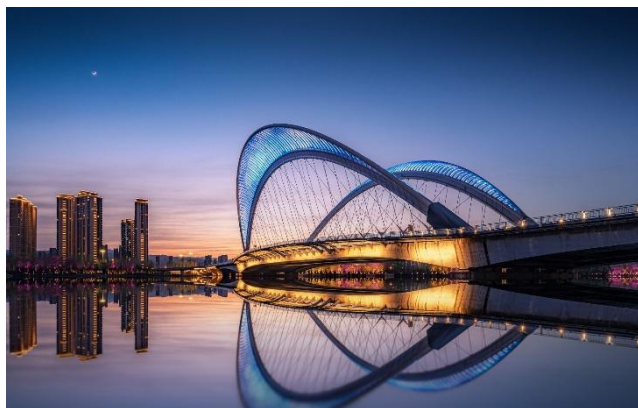
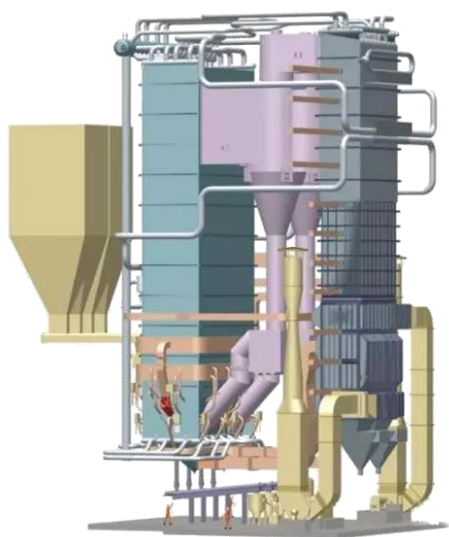


14th CFB

21 - 24 July 2024

Taiyuan Shanxi China

PROGRAMME



Host



清华大学
Tsinghua University

Tsinghua University

Held by



太原理工大学



Taiyuan University of Technology
Shanxi Key Laboratory of Efficient and Clean Combustion and
Utilization of Circulating Fluidized Bed



Chinese Society of Particuology

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Sponsors



Welcome

Welcome to the 14th International Conference on Circulating Fluidized Bed Technology (CFB-14) at Taiyuan Bingzhou Hotel on July 21-24, hosted by Tsinghua University, and held by Taiyuan University of Technology, Chinese Society of Particuology. The conference has a tradition of almost 50 years. The first one being held in 1985 in Halifax, Canada, and subsequent conference were held every three years. The symposium is to offer a platform for all attendants to exchange their ideas, experience and information on the science of Basic research and application of circulating fluidized bed technology and new fluidized bed reactor technology, as well as their addressing energy and environmental issues. The 8th International Symposium on Spouted Beds, ISSB-8, will also be held as a joint event with the CFB-14.

The CFB-14 technical program consists of four plenary plus thirty keynote invited lectures, five simultaneous sessions of oral presentations. A total of 194 abstracts from 15 countries and regions are chosen, covering eight colloquiums including Dynamics, heat and mass transfer of gas-solid flow, Modeling and simulation, Measurements and instrumentation, Catalytic reaction and novel reaction process, Combustion, pyrolysis and gasification, Looping and energy storage processes, Fine particle and nano-particle systems, Industrial experience and application. All of the fullpapers, after the thorough peer review, are recommended to be collected in the CFB-14 that published by China Academic Journals (CD Edition) Electronic Publishing House (CNKI). The excellent papers would be recommended for publication in international journals as a special issue of Powder technology, Advanced Powder Technology, Energies and Applied Thermal Engineering.

The local organizing committee has put together exciting social programs. The welcome reception on Sunday (July, 21) and The Symposium Banquet on Tuesday (July, 23) will be held on Taiyuan Bingzhou Hotel. The technical tour to Guojin Electric Power Plant will be arranged on Wednesday afternoon (July, 24).

We would like to thank all the attendees for their contributions to the symposium. We would also like to thank the hard work of the organization team and committee members for making the symposium possible.

On behalf of all of us I wish you all an inspiring conference week!

Chairman
Prof. Yue, Guangxi
Tsinghua University
Beijing, China, July 2024

International Committee

14th International conference on Circulating Fluidized Bed Technology CFB-14

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Prof. Guangxi Yue Tsinghua University, China

Vice Chairman

Prof. Fei Wei Tsinghua University, China

Prof. Guangwen Xu Shenyang University of Chemical Technology, China

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Wei Ge Institute of Process Engineering, CAS, China

Qinggang Lyu Institute of Engineering Thermophysics, CAS, China

Haigang Wang Institute of Engineering Thermophysics, CAS, China

Yuhan Sun Huairou Laboratory Shanxi Research Institute, China

Guogang Sun China University of Petroleum, China

Lunbo Duan Southeast University, China

Hui Wang Harbin Institute of Technology, China

Yitian Fang Institute of Coal Chemistry, CAS, China

Junfu Lyu Tsinghua University, China

Zhenshan Li Tsinghua University, China

Xiaogang Hao Taiyuan University of Technology, China

Suxia Ma Taiyuan University of Technology, China

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Guangwen Xu	Tsinghua University, China
Hairui Yang	Tsinghua University, China
Guangxi Yue	Tsinghua University, China
Chang-Keun Yi	Korea Institute of Energy Research, South Korea

**THE EIGHTH INTERNATIONAL SYMPOSIUM ON SPOUTED BEDS
ISSB-8**

Organizing Committee

Xiaotao Bi	Co-Chair , University of British Columbia, Canada
Martin Olazar	Co-Chair , University of Basque Country, Spain
Xiaojun Bao	Fuzhou University, China
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Gartzen Lopez	University of Basque Country, Spain
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Ziliang Wang	Shandong University, China
Palash Mollick	Bhabha Atomic Research Centre, India

International Advisory Board

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Rodrigo Bettiga	University of Sao Carlos, Brazil
Elisabetta Arato	University of Genova, Italy
Palash Mollick	Bhabha Atomic Research Centre, India
Ziliang Wang	Shandong University, China
Dening Jia	Canadian Nuclear Laboratories, Canada

Colloquium Chair

A. Dynamics, heat and mass transfer of gas-solid flow	
Prof. Guogang Sun	China University of Petroleum, Beijing
Asso. Prof. Chenxi Zhang	Tsinghua University
Prof. SUNGWON KIM	Korea National University of Transportation-Department of IT-Energy Convergence
B. Modeling and simulation	
Prof. Haiying Qi	Tsinghua University
Prof. Dongfang Li	Kunming University of Science and Technology
Prof. David Pallarès	Chalmers University of Technology
C. Measurements and instrumentation	
Prof. Haigang Wang	Institute of Engineering Thermophysics, CAS
Asso. Prof. Jianbo Li	Chongqing University
Lennard Lindmüller	Hamburg University of Technology
D. Catalytic reaction and novel reaction process	
Prof. Mengxi Liu	China University of Petroleum, Beijing
Prof. Xingxing Cheng	Shandong University
Prof. Thomas Karl Hannl	BEST - Bioenergy and Sustainable Technologies GmbH-Syngas Platform Vienna
E. Catalytic reaction and novel reaction process	
Prof. Hairui Yang	Tsinghua University
Prof. Yaning Zhang	Harbin Institute of Technology
Prof. Fabrizio Scala	University of Napoli Federico II
F. Looping and energy storage processes	
Prof. Zhenshan Li	Tsinghua University
Prof. Daoyin Liu	Southeast University
Prof. Franz Winter	TU Wien, Institute of Chemical, Environmental and Bioscience Engineering
G. Fine particle and nano-particle systems	
Prof. Xianhua Wang	Huazhong University of Science and Technology
Asso. Prof. Runxia Cai	Shanghai Jiao Tong University
Prof. Daniele Sofia	University of Calabria
H. Industrial experience and application	
Prof. Leming Cheng	Zhejiang University
Prof. Suxia Ma	Taiyuan University of Technology
Prof. Georgy Ryabov	All Russia Thermal Engineering Institute

Instructions to Delegates

1. Conference Location

Taiyuan Bingzhou Hotel

Add: No.118 Yingze Street, Yingze

District, Taiyuan, Shanxi

Tel: Ms. Lin +86 18535197368

Email: 2284256178@qq.com



2. Registration

Location: Lobby (First floor) of Taiyuan Bingzhou Hotel

Open Hours: **Sunday, July 21 16:00 – 23:00**

Monday – Wednesday (July 22-24) from 8:00

Registration Fees (payment received after May 15, 2024)

For international attendees - General registrant: USD 600, Student: USD 350;

For Chinese attendees - General registrant: CNY 4300, Student: CNY 2500;

Registration prices include:

Entrance to oral presentations, welcome reception, conference breakfast, dinner, lunches, refreshments during the sessions' breaks and conference kit (bag, conference programme, book of abstracts, USB).

3. Banquet

Time: 18:30 – 21:00, July 23 (Tuesday)

Location: Taiyuan Bingzhou Hotel second Bingzhou Department (refer to the Map of Taiyuan Bingzhou Hotel below)

4. Technical Tour

The technical tour of the CFB-14 will be arranged from 14:00 to 18:00 in the afternoon of July 24 (Wed.).

Place: Guojin Electric Power Plant

The buses will be ready at 14:00 of July 24 (Wed.) at the entrance of Bingzhou Hotel.

5. Meal

The hotel offers free breakfast. Lunch and supper are included in the registration fee. You are required to show the meal voucher before the meal.

Breakfast

7:00 - 8:30, Xiwei Pavilion Cafeteria (First Floor)

Lunch

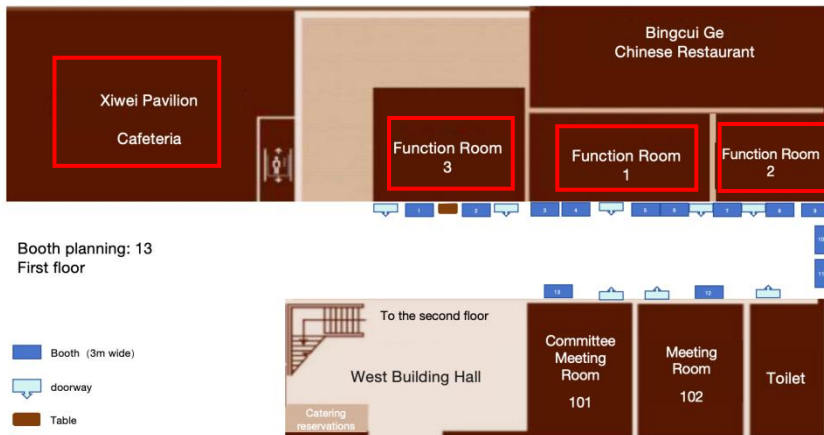
12:00-13:30, Xiwei Pavilion Cafeteria (First Floor)

Dinner

18:00-20:00, Xiwei Pavilion Cafeteria (First Floor)

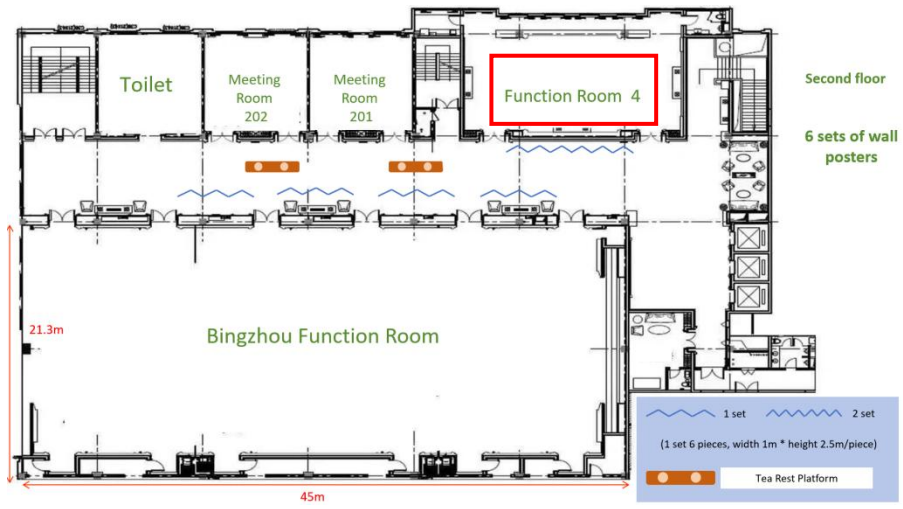
Hotel conference room and board planning:

First Floor:



Second Floor:

General Information



Third Floor:

Sub venue 5
分会场 5

三层
three layers



How to leave there?

1. Taiyuan Bingzhou Hotel (or Shanxi Longcheng International Hotel, or Sanjin International Hotel) → **Taiyuan Wusu International Airport: 16.6 km away.**

- ✓ Public Bus: walk about 430 m / 80 m / 420 m to the Guangchang Bus Stop. Take the No.201 Bus to the Taiyuan Wusu International Airport Bus Stop, then walk about 110 m to the airport. About 75 minutes and costs 2 yuan (0.27 USD).
- ✓ Taxi: About 30 minutes and costs about 30 yuan (4.1 USD).

Tips: Show the taxi driver → [Please Take Me To Taiyuan Wusu International Airport. Thank you!](#) (请您送我去太原武宿国际机场, 谢谢!)

2. Taiyuan Bingzhou Hotel (or Shanxi Longcheng International Hotel, or Sanjin International Hotel) → **Taiyuan Railway Station: 2.3 km away.**

- ✓ Public Bus: walk about 470 m / 150 m / 300 m to the Guangchang Bus Stop, then take the No.820/618/615/611/308/10/6 to the Taiyuan Railway Station Bus Stop, walk about 510 m to the Railway station. About 22 minutes and costs 1 yuan (0.14 USD).
- ✓ Taxi: About 15 minutes and costs about 10 yuan (1.4 USD).

Tips: Show the taxi driver → [Please Take Me To Taiyuan Railway Station. Thank you!](#) (请您送我去太原站, 谢谢!)

3. Taiyuan Bingzhou Hotel (or Shanxi Longcheng International Hotel, or Sanjin International Hotel) → **Taiyuan South Railway Station: 10.4 km away.**

- ✓ Public Bus: walk about 440 m / 80 m / 420 m to the Guangchang Bus Stop. Take the No.902/901/201/11 Bus and get off at the Taiyuan South Railway Bus Stop. Walk about 500 m to the railway station. About 65 minutes and costs 1-3 yuan (0.14-0.41 USD).
- ✓ Taxi: About 25 minutes and costs about 25 yuan (3.4 USD).

Tips: Show the taxi driver → [Please Take Me To Taiyuan South Railway Station. Thank you!](#) (请您送我去太原南站, 谢谢!)

Introduction to Guojin Electric Power Plant

Shanxi Guojin Electric Power Plant is located in Wenshui Economic Development Zone founded in July 2009. The enterprise is a resource comprehensive utilization enterprise established by



Jinneng Power Group Co., Ltd. and Shanxi Jindi Coal Coke Co., Ltd., according to the share ratio of 51% : 49%. The 2×350 MW low calorific value coal power generation project and 2×2 million tons/year solid waste comprehensive utilization project have been constructed and are in operation. The power generation project uses coal gangue, washing medium coal and coal sludge as fuel, uses urban water as production water source, adopts supercritical circulating fluidized bed boiler, efficient bag dust removal, flue gas desulfurization (inside the furnace + outside the furnace), flue gas denitrification, fully enclosed coal yard and other energy-saving and environmental protection measures, and supports the construction of solid waste comprehensive utilization of cement project, which is a typical comprehensive utilization of circular economy project.

Highlights:

1. The world's first 350MW supercritical circulating fluidized bed boiler.
2. The first unit to achieve ultra-low emission in Shanxi Province.
3. The first domestic power plant using the reclaimed water of the city.
4. The first coal gangue-fired power plant adopting desulfurization and SNCR denitrification device simultaneously.

The buses for the technical tour will be ready at 14:00 of July 24 (Wed).

Agenda

Sunday, July 21, 2024

16:00 – 23:00 **Registration**, First Floor

18:00 – 21:00 **Reception**, First Floor

Monday, July 22, 2024

07:30 – 10:00 **Registration**, First Floor

08:00 – 08:20 **Opening Ceremony**, Second Floor Bingzhou Function Room

08:20 – 10:00 **Plenary Lecture 1-2**, Second Floor Bingzhou Function Room

10:00 – 10:20 *Taking Photos Coffee Break*

10:20 – 12:00 **Plenary Lecture 3-4**, Second Floor Bingzhou Function Room

12:00 – 13:30 *Lunch, Xiwei Pavilion cafeteria*

13:30 – 15:10 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 4, 5

15:10 – 15:40 *Coffee Break*

15:40 – 17:20 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 4, 5

17:20 – 18:30 **Poster Sessions**, Second Floor

18:30 – 20:00 *Dinner, Xiwei Pavilion cafeteria*

20:00 – 21:00 *Committee Meeting*, Function Room 1

Tuesday, July 23, 2024

07:30 – 10:00 **Registration**, First Floor

08:00 – 09:40 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 4, 5

09:40 – 10:10 *Coffee Break*

10:10 – 11:50 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 4, 5

11:50 – 13:30 *Lunch, Xiwei Pavilion cafeteria*

13:30 – 15:10 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 5

15:10 – 15:40 *Coffee Break*

15:40 – 17:20 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 5

17:20 – 18:30 **Poster Sessions**, Second Floor

18:30 – 21:00 *Banquet, Second Floor Bingzhou Function Room*

Wednesday, July 24, 2024

07:30 – 10:00 **Registration**, First Floor

08:00 – 09:40 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 5

09:40 – 10:10 *Coffee Break*

10:10 – 11:50 **Scientific presentations**, First Floor, Function Room 1, 2, 3, 5

11:50 – 14:00 *Lunch, Xiwei Pavilion cafeteria*

14:00 – 18:00 **Technical tour**, Free Bus at the entrance of Bingzhou Hotel

Detailed Scientific Programme

Oral presentation

The plenary lecture invited speakers have 40 min +10 min dedicated for discussion at their disposal. The keynote invited speakers have 25 min + 5 min dedicated for discussion at their disposal.

All oral presenters are requested to copy your PPT into the computer, at least 5 minutes before the start of each session. The time for each paper in the oral session is 20 min. Please limit your presentation in 15 minutes and leave 5 minutes for questions, answers and comments. Also, please make sure your presentation is compatible with the AV system provided.

Poster

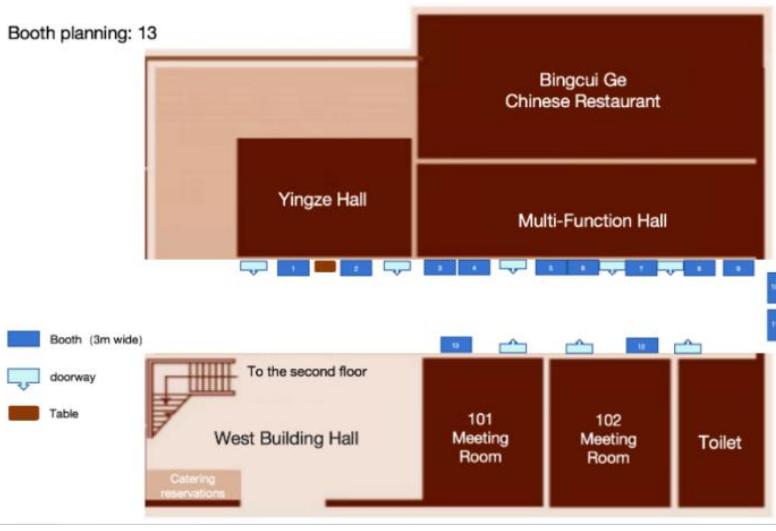
All authors of poster session papers shall take your printed poster to conference site (135 cm high×90 cm wide). You are requested to submit your poster to the staff when you make conference registration. All the entries are to be mounted in the numbered space that has been reserved for it.

Set-up: Poster on the second hall of Bingzhou Hotel (Refer to the Map of Taiyuan Bingzhou Hotel below).

Special issue information

The excellent papers would be recommended for publication in international journals as a special issue of *Powder technology*, *Advanced Powder Technology*, *Energies* and *Applied Thermal Engineering*.

Detailed Scientific Programme



Conference Topics Code

Conference Topics	Locals&Sessions		
	Monday, July22	Tuesday, July23	Wednesday, July24
A -Dynamics, heat and mass transfer of gas-solid flow	Room 1 Session1-2	Room 1 Session3-4	---
B -Modeling and simulation	Room 2 Session1-2	Room 2, Session3-6	Room 2 Session7
C -Measurements and instrumentation	---	---	Room 2 Session8
D -Catalytic reaction and novel reaction process	Room 4 Session1-2	---	---
E -Combustion, pyrolysis and gasification	Room 3 Session1-2	Room 3 Session3-6	Room 3 Session7-8 Room 1 Session 8
F -Looping and energy storage processes	---	Room 1 Session5-6	
G -Fine particle and nano-particle systems	---	---	Room 1 Session7-8
H -Industrial experience and application	---	Room 4 Session3-6	---
ISSB-8	Room 5 Session1-2	Room 5 Session3-6	---

Schedule of Paper -- July 22-24, 2024

14th International conference on Circulating Fluidized Bed Technology (CFB-14) The Eighth International Symposium on Spouted Beds (ISSB-8) Taiyuan Bingzhou Hotel, July 21-24, 2024 AM. Monday, July 22, 2024 Second Floor Bingzhou Function Room	
8:00 – 8:20	Welcome and Opening ceremony Bingzhou Function Room (Second Floor)
	Plenary Lecture series Chair: Fei Wei Bingzhou Function Room (Second Floor)
8:20 – 9:10	Plenary Lecture 1: <div style="text-align: center;">The progress of CFB combustion in China Prof. Guangxi Yue</div>
9:10 – 10:00	Plenary Lecture 2: <div style="text-align: center;">Challenges in Understanding, Modelling and Control of Particle Formulation by Spray Granulation Prof. Stefan Heinrich</div>
10:00 – 10:20	<i>Coffee Break</i>
	Plenary Lecture series Chair: Stefan Heinrich Bingzhou Function Room (Second Floor)
10:20 – 11:10	Plenary Lecture 3: <div style="text-align: center;">Revisiting Operating Regimes of Gas-Solid Fluidization Prof. Jesse Zhu</div>
11:10 – 12:00	Plenary Lecture 4: <div style="text-align: center;">Fluidization technology of nanomaterials and its applications Prof. Fei Wei</div>
12:00 – 13:30	<i>Lunch</i>

Schedule of Paper -- July 22-24, 2024

14th International conference on Circulating Fluidized Bed Technology (CFB-14)				
P.M. Monday, 22 July, 2024 (Session 1)				
ROOM	Function Room 1	Function Room 2	Function Room 3	Function Room 4
Topics	A-Dynamics, heat and mass transfer of gas-solid flow	B-Modeling and simulation	E-Combustion, pyrolysis and gasification	D-Catalytic reaction and novel reaction process
Chair/Co-chair	Chenxi Zhang/ Sungwon Kim	Junwu Wang/Dongfang Li	David Pallarès /Runxia Cai	Franz Winter/Jianbo Li
13:30-14:00	K1--Guogang Sun. Efforts to improve the performance of the tangential inlet reverse cyclone separators China University of Petroleum, Beijing	K2--Haigang Wang. Investigation fluidized bed drying process based on multi-modalities process tomography and validated by CFD simulation Institute of Engineering Thermophysics, Chinese Academy of Sciences	K3--Haiying Qi. Original NOx Emission from CFB Boilers & Fine Particle Bed Materials. Tsinghua University	K4--Guangwen Xu. Flash calcination of magnesite in transport bed: reaction characterization and industrial application Shenyang University of Chemical Technology
14:00-14:20	(A-013) Qingyu Zhang, Leming Cheng, Kun Li, Zhangke Ma, Qiang Guo, Chaogang Wu, Experimental study on secondary air mixing in a CFB with multi-tracer-gas technique Zhejiang University	(B-022) Jingxuan Yang, Portfolio optimization of inlet and outlet sizes to improve the performance of two-stage cyclones in series Taiyuan University of Technology	(E-012) Kun Li, Leming Cheng, Qingyu Zhang, Xin Zhao, Bo Wang, Weiguo Zhang, NO_x and N₂O emissions during NH₃-coal co-firing in a circulating fluidized bed Zhejiang University	(D-017) Ji Young Nam, Ji Yong Kim, Jong Wook Bae, Dong Hyun Lee, A study on DME carbonylation to MA using zeolite based catalyst in a circulating fluidized bed Sungkyunkwan University, Korea
14:20-14:40	(A-015) Shiwei Yuan, Guogang Sun, Gang Cao, Yingyi Wu, Study on short-circuit flow in cyclone separator based on response surface methodology China University of Petroleum, Beijing	(B-030) Jinzhi Cai, Zhenshan Li, First-principal-based rate equation model for fluidized bed and its application on sorption-enhanced water-gas shift Tsinghua University	(E-028) Ge Chen, Li Shiyuan, Kinetics of NO reduction by biomass char under CO₂ atmosphere in micro-fluidized bed based on the new quantitative method vis on-line mass spectrometer University of Science & Technology Beijing	(D-029) Zhang Jiehan , Li Shiyuan , Wang Linwei, Co-reduction of Hematite by Coconut Shell Char and Hydrogen in Fluidized Bed University of Science & Technology Beijing
14:40-15:00	(A-016) Gang Cao, Guogang Sun, Shiwei Yuan, Yingyi Wu, Study on improving the performance of cyclone separator with a spiral guide vane China University of Petroleum, Beijing	(B-034) Wang Chuanhao, Ge Chen, Li Shiyuan, Density functional theory study on the influence mechanism of hydroxyl group on NO reduction over char during oxy-fuel circulating fluidized bed combustion University of Science and Technology Beijing	(E-033) Sheng Yao, Kun Wang, Xiaoying Yuan, Yusheng Zhang, Cuiping Wang, Sludge ash performance of oxygen-carrying and catalysis on wet sludge gasification Shandong University of Science and Technology	(D-047) Iwei Wang, Zhenshan Li, Cu and Al-modified limestone with high stability in integrated CO₂ capture and utilization using MFB-TGA-MS Tsinghua University

Schedule of Paper -- July 22-24, 2024

15:00-15:20	<p>(A-023) Zhang Rongdi, Liu Zhicun, Dong Zhonghao, Li Jianbo, Lu Xiaofeng, The Cold Model Experimental Study on the Effect of Rapid Changes in Fluidization Air Velocity on Gas-Solid Concentration in the Riser of Circulating Fluidized Bed Chongqing University</p>	<p>(B-038) Weiqin Lu, Xueyu Tang, Changhao Ma, Tuo Zhou, Junfu Lyu, Xiwei Ke, An Innovative Approach for Electromagnetic Induction Heat Storage Coupled with Moving Bed Heat Release: A CFD-DEM Exploration Tsinghua University-Department of Energy and Power Engineering</p>	<p>(E-129) Jiahang Zhang, Jianguo Zhu, Jingzhang Liu, Qinggang Lyu, Influence of preheating temperature on the conversion behavior of sulfur in the process of coal self-preheating by circulating fluidized bed University of Chinese Academy of Sciences</p>	<p>(D-075) Bingjun Du, Yuchen Ma, Weiqin Lu, Xueyu Tang, Junfu Lyu, Xiwei Ke, Circulating Experiments on Qualitative Catalytic Characteristics of Iron-rich Fly Ash under Biomass-volatile-fired Fluidized Bed Conditions Tsinghua University</p>
15:20-15:40	Coffee Break			

Schedule of Paper -- July 22-24, 2024

P.M. Monday, 22 July, 2024 (Session 2)				
ROOM	Function Room 1	Function Room 2	Function Room 3	Function Room 4
Topics	A-Dynamics, heat and mass transfer of gas-solid flow	B-Modeling and simulation	E-Combustion, pyrolysis and gasification	D-Catalytic reaction and novel reaction process
Chair/Cochair	Chenxi Zhang/ Sungwon Kim	Junwu Wang/Dongfang Li	David Pellarès /Runxia Cai	Franz Winter/Jianbo Li
15:40-16:10	K5-- Hairui Yang. Exploring fundamental scientific issues in utilizing carbide slag from solid waste for heat storage Tsinghua University	K6-- Leming Cheng. Numerical solution in a large-size CFB boiler design Zhejiang University	K7-- Andrew Minchener. Circulating fluidised bed combustion systems: challenges and opportunities International Centre for Sustainable Carbon (ICSC)	K8-- Mengxi Liu. Development of a Novel Coupled CFB Reactor for Pyridine Synthesis China University of Petroleum, Beijing
16:10-16:30	(A-024) Yanqin Li*, Borui Zhou, Fidel C. X. Mário, Impact of an external sound field on a particle in fluidization Zhengzhou University	(B-042) Tianshuo Li, Qihang Jin, Yufeng Duan, Numerical Simulation of Ejector for CEMS Dilution Module Southeast University-School of Energy and Environment	(E-035) Abdullah Sadeq, Shen Wang, Marian Schmitt, Hannah Sophia Rothberg, Stefan Heinrich, On the Mechanical Stability of Biomass Pellets with Different Initial Densities after Fluidized Bed Pyrolysis Hamburg University of Technology, Germany	(D-114) Heng Liu, Lin Li, Chong Liu, Tianxin Li, Guang Sun, Lunbo Duan, Decoupling of Catalytic Reactions in Oxygen Carrier Aided Fluidized Bed Combustion Southeast University
16:30-16:50	(A-026) Dong, Zhonghao; Wu, Zhaoliang; Zhang, Rongdi; Li, Jianbo; Lu, Xiaofeng, Study on Gas-Solid Flow Characteristics in a Circulating Fluidized Bed with Internal Circulating Ash Bin Chongqing University	(B-045) Zhichao Song, Tianqi Tang, Yurong He, Simulation of cross-scale flow characteristics of particles/fluids based on a hybrid CFD-DEM model Harbin Institute of Technology-School of Energy Science	(E-040) Manxia Shang, Peixing Han, Junping Zhu, Zhong Huang, Junfu Lyu, Xiwei Ke, Experimental study on ash formation and attrition characteristics of fuel applying to Powdered Coal-Circulating Fluidized Bed Tsinghua University	(D-176) Ruifang Zhang, Gas Adsorption on CuO Surface during NH ₃ Combustion in a Fluidized Bed: a DFT Study Tsinghua University-Key Laboratory for Thermal Science and Power Engineering of Ministry of Education
16:50-17:10	(A-053) Xueyu Tang, Weiqin Lu, Wenfeng Shen, Junfu Lyu, Xiwei Ke, Comparison of mass transfer characteristics between fixed-bed and fluidized bed reactors using CFD-DEM simulation Tsinghua University	(B-060) Liang Liu, Kaixuan Gao, Yan Jin, Zhong Huang, Jianle He, Xiwei Ke, Simulation study on gas-solid flow characteristics of a 350MW supercritical circulating fluidized bed boiler within wide load conditions Taiyuan University of Technology	(E-043) Marian Schmitt, Lennard Lindmüller, Stefan Heinrich, Reaction Kinetics of Biogenic Fuel for Chemical Looping Hamburg University of Technology, Germany	(D-185) Caili Li, Chun Zhu, Hongjian Tang, Yuanqiang Duan, Zhenkun Sun, Lunbo Duan, Insights into hydrogenation of limestone in a fluidized bed reactor: Reaction profiles and product analysis Southeast University

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17:10-17:30	(A-062) Yanjun Zuo, Haiyang Li, Tianshuo Li, Ping Liu, Yufeng Duan, Numerical Simulation Study on Chlorine Removal by Adsorbent Injection in the Flue Gas of a 300 MW Circulating Fluidized Bed Boiler Southeast University	(B-085) Lei Yang, Chao Yang, CFD simulation of hydrodynamics in baffled micro-fluidized beds State Key Laboratory of Biochemical Engineering	(E-048) Ling Jiang, Yiran Li, Pengwei Zhang, Yongfeng Tian, Zhong Huang, Xiwei Ke, Pyrolysis in fluidized bed and fuel nitrogen distribution considering differences in coal types Tsinghua University	
17:30-18:30	Breaks & Poster			
18:30-20:00	Dinner			
18:00-19:00	<i>Committee Meeting</i>			

Schedule of Paper -- July 22-24, 2024

A.M. Tuesday, 23 July, 2024 (Session 3)				
ROOM	Function Room 1	Function Room 2	Function Room 3	Function Room 4
Topics	A-Dynamics, heat and mass transfer of gas-solid flow	B-Modeling and simulation	E-Combustion, pyrolysis and gasification	H-Industrial experience and application
Chair/Cochair	Guogang Sun/Daniele Sofia	Haigang Wang/Lennard Lindmüller	Haiying Qi/Yaning Zhang	Leming Cheng/Mengxi Liu
8:00-8:30	K9-- Chenxi Zhang. Heat-wave like transpot in fluidization Tsinghua University	K10-- Junwu Wang. Physics-informed dynamic mode decomposition for short-term and long-term prediction of gas-solid flows China University of Petroleum, Beijing	K11-- Dongfang Li. Gas-solid flow between furnace and external heat exchanger with internal circulation in a CFB boiler Kunming University of Science and Technology	K12-- Yufeng Duan. R & D of Hg-CEMS in China for coal-fired power plant Southeast University
8:30-8:50	(A-069) Azka Rizwana Siddiqui, Anna Köhler, Diana Carolina Guio-Pérez, David Pallarès, VERTICAL MIXING OF SOLIDS IN BINARY BEDS – ANALYSIS BY MAGNETIC SOLIDS TRACING , Chalmers University of Technology, Gothenburg, Sweden.	(B-092) Maria Giordano, Francesca Orsola Alfano, Francesco Paolo Di Maio, Alberto Di Renzo, Using DEM to evaluate tribocharging and electrostatic forces of polarizable particles in fluidized bed Università della Calabria-DIMES, Italy	(E-049) Yongfeng Tian, Bin Wen, Xuemin Liu, Zhong Huang, Yan Jin, Xiwei Ke, Experimental and Kinetic study of Coal Pressurized Gasification Characteristics using TGA-MS method Taiyuan University of Technology	(H-086) Yijun Liu, The particle system challenges for calcium looping process: Review of the state of art and future research directions Nanjing Vocational University of Industry Technology
8:50-9:10	(A-105) Anjun Li, Xiaoyu Li, Xiaogang Xu, Yuekan Zhang, Liyun Zhu, Zhenbo Wang, Peikun Liu, Numerical study of dynamic and thermal behaviors of cold clusters impacting on the high-temperature surfaces in cyclone reactors Shandong University of Science and Technology	(B-093) Francesca Orsola ALFANO, Francesco P. DI MAIO, Alberto DI RENZO, CFD-DEM analysis of the gas and particle flow in axial (Uniflow) cyclone separators University of Calabria, Italy	(E-050) Bin Wen, Yongfeng Tian, Xuemin Liu, Junping Zhu, Junfu Lyu, Xiwei Ke, Investigation on the devolatilization characteristics of municipal solid waste using pressurized thermogravimetric analysis Tsinghua University	(H-139) Xiannan Hu, Tong Wang, Haowen Wu, Hairui Yang, Addressing Thermal Inertia in a 440 t/h CFB Boiler with Honeycomb Anti-Wear Metal: An Effective Approach for Improved Flexibility Tsinghua University
9:10-9:30	(A-119) Sen Wang, Zhenhua Hao, Yitian Fang, Numerical research on flow and reaction behaviors on the oxidative coupling of methane based on particle cluster effect Institute of Coal Chemistry, State Key Laboratory of Coal Conversion, Chinese Academy of Sciences, Taiyuan	(B-095) Bingzhen Zhang, Feifei Song, A self-adaptive fitting algorithm for EMMS drag using Artificial Neural Network Tianjin University of Technology-School of Chemistry and Chemical Engineering	(E-054) Changhao Ma, Yuchen Ma, Weiqin Lu, Xueyu Tang, Zhong Huang, Xiwei Ke, Experimental Investigation on Effect of Iron-rich Fly Ash on Biomass-volatile Combustion Characteristics in the Fluidized Bed Tsinghua University	(H-142) Yuge Yao, Tuo Zhou, Yang Zhang, Hairui Yang, Prediction of the bed temperature of a CFB boiler after a sudden power cut Tsinghua University

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9:30-9:50	<p>(A-121) Hongliang Xiao, Hairui Yang, Haiying Qi, Influence of Heterogeneity of Dense-Phase Zone on Ultra-Low NOx Emission in CFB Boilers Tsinghua University</p>	<p>(B-101) Zhengquan Li, Boqun Zhang, Huimin Chen, Yide Wang, Kaixuan Li, Coarse grained CFD-DEM simulation of industrial scale CFB Jiangxi University of Science</p>	<p>(E-055) Alexander Kuhn, Christoph Graf, Dennis Hülsbruch, Emmi Kallio, Alex Soderholm, Vesna Barisic, Jochen Ströhle, Bernd Epple, Experimental Investigation of Combustion Characteristics during Oxygen Carrier Aided Combustion of Solid Recovered Fuel and Coal in a 1 MWth Circulating Fluidized Bed Technical University of Darmstadt, Institute for Energy Systems and Technology, Germany</p>	<p>(H-151) Wang Junfeng, Ke Xiwei, Wang Gang, Guo Xin, Wang Yu, Jiang Xiaoguo, Lyu Junfu., Technical scheme of ultra-supercritical CFB boiler with deep peaking characteristics Tsinghua University</p>
9:50-10:10	<i>Coffee Break</i>			

Schedule of Paper -- July 22-24, 2024

A.M. Tuesday, 23 July, 2024 (Session 4)				
ROOM	Function Room 1	Function Room 2	Function Room 3	Function Room 4
Topics	A-Dynamics, heat and mass transfer of gas-solid flow	B-Modeling and simulation	E-Combustion, pyrolysis and gasification	H-Industrial experience and application
Chair/Cochair	Guogang Sun/Daniele Sofia	Haigang Wang/Lennard Lindmüller	Haiying Qi/Yaning Zhang	Leming Cheng/Mengxi Liu
10:10-10:40	K13-- Wej Wang. A multiscale interphase heat transfer model based on steady-state EMMS Institute of Process Engineering, Chinese Academy of Sciences	K14-- Fabrizio Scala. Chemical Looping CO₂ Capture and Catalytic Methanation over Dual Function Materials in a Twin Fluidized Bed Reactor University of Napoli Federico II	K15-- Xingxing Cheng. Carbon Emission and Techno-Economic analysis of Different Biomass Application pathways Shandong University	(H-081) <i>Diana Carolina Guío-Pérez, Anna Köhler, David Pallarès.</i> Biochar production in large-scale dual fluidized bed – mixing and char properties Chalmers University of Technology, Sweden
10:40-11:00	(A-173) <i>Chenhuan Xu, Liang Wang, Yiming Zhang, Yongmin Zhang,</i> Experimental investigation of bed-to-wall heat transfer characteristics of a solid amine sorbent in a dense bed China University of Petroleum, Beijing	(B-102) <i>Qiuya Tu, Lei Mei, Haigang Wang, Xiaosong Jiang,</i> Simulation of the hydrodynamics of a pilot-scale circulating fluidized bed SPIC Science and Technology Research Institute Co	(E-057) <i>Kyösti Vänskä, Emmi Kallio, Marcin Kost, Alexander Kuhn, Jochen Ströhle, Bernd Epple, Vesna Barišić,</i> Fouling and Corrosion in Retrofit CFB with Increasing Share of Waste Sumitomo SHI FW Energia Oy, Finland	(H-154) <i>Shuangzhu Kong, Mengxi Liu,</i> Simulation of a Coupled Fluidized Bed Reactor for Pyridine Synthesis Process China University of Petroleum-Beijing
11:00-11:20	(A-174) <i>Zhihan Li,</i> Study on moving bed heat exchangers with gradually shrinking and expanding tube Shandong University of Technology	(B-126) <i>Wenhao Lian, Linhui Yuan, Yifan Mu, Kun Yang, Wei Song, Ruina Shi,</i> Simulation of heat transfer in a downer-type pyrolyzer with binary particles by considering carrying gas role in the coal heating process North University of China	(E-063) <i>Ping Liu, Yanjun Zuo, Yufeng Duan,</i> N₂O and NO_x generation and conversion characteristics of coal combustion in a micro fluidized bed Southeast University	(H-155) <i>Feng Cheng, Shutong Jin, Mengxi Liu,</i> Experimental study on hydrodynamics characteristic of tapered risers China University of Petroleum Beijing
11:20-11:40	(A-181) <i>Qiang Guo, Ning Yang,</i> Orderly regulation of gas bubbles in fluidized beds State Key Laboratory of Mesoscience and Engineering, Institute of Process Engineering, Chinese Academy of Sciences	(B-127) <i>Hao Shi, Shuaijie Qi, Huikang Song, Hu Pan, Yaji Huang,</i> A comprehensive model of biomass gasification process in a fluidized bed gasifier involving pyrolysis, hydrodynamic and reaction kinetics Southeast University	(E-065) <i>Yermakhan Gabdulkarimuly, Sultan Ybray, Michal Jeremias, Dhawal Shah, Yerbol Sarbasov,</i> Gasification of sewage sludge samples in the laboratory scale bubbling fluidized bed Nazarbayev University, Kazakhstan	(H-156) <i>Chengliang Liu, Shaoqing Wei, Leilei Qiao, Xiaoquan Wang, Hao Nie, Hao Feng, Shaojun Li, Xiwei Ke,</i> Experimental investigation on the banked fire characteristics of a 300MW subcritical circulating fluidized bed boiler Shanxi Research Institute of Huairou Laboratory

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11:40-12:00	<p>(A-091) <i>Francesca O. Alfano, Francesco P. Di Maio, Rossella Girimonte, Daniele Sofia, Alberto Di Renzo. DEM-CFD simulation of microwave-assisted fluidized bed drying of ceramic granular material</i> University of Calabria (Italy)</p>	<p>(B-195) <i>Yuxin Yan, Suxia Ma, Xulu Zhao, Chen Luo, Qiao Xue, Simulation Study on The Low Load Properties of 350MW Circulating Fluidized Bed Boiler</i> Taiyuan University of Technology</p>	<p>(E-059) <i>Chen Luo, Suxia Ma, Jianwei Liu, Qiao Xue, Chunbo Wang, Experimental and Simulation Study on snr Denitrification at Low Temperature</i> Shanxi Research Institute of Huairou Laboratory</p>	<p>(H-180) <i>Ying Jia, Multi-scale modeling and particle dynamics study of dry coal preparation in gas-solid fluidized bed</i> China University of Mining & Technology</p>
12:00-13:30	<i>Lunch</i>			

Schedule of Paper -- July 22-24, 2024

P.M. Tuesday, 23 July, 2024 (Session 5)			
ROOM	Function Room 1	Function Room 2	Function Room 3
Topics	A-Dynamics, heat and mass transfer of gas-solid flow F-Looping and energy storage processes	B-Modeling and simulation	E-Combustion, pyrolysis and gasification
Chair/Cochair	Fabrizio Scala/Jiajie Zhang	Suxia Ma/Xingxing Cheng	Hairui Yang/Georgy Ryabov
13:30-14:00	K16-- Zhenshan Li. Demonstration of 4 MW chemical looping combustion for solid fuels Tsinghua University	K17-- Franz Winter. Optimizing lab-scale tests to study chemical kinetics TU Wien, Institute of Chemical, Environmental and Bioscience Engineering	K18-- Yanning Zhang. Microwave-assisted air gasification of biomass in fluidized bed reactor Harbin Institute of Technology
14:00-14:20	(A-076) Philip Kjaer Jepsen, Diana Carolina Guío-Pérez, Marlene Bonmann David Pallarès. Measurements of the solids lateral flow in the transport region of a fluid-dynamically down-scaled circulating fluidized bed. Chalmers University of Technology	(B-130) Zhipeng Li, Hongjian Tang, Lunbo Duan, Methane Oxidation over CuFe₂O₄ in Chemical Looping with Oxygen Uncoupling: a DFT Study Southeast University	(E-072) Chengliang Han, Ruifang Zhang, Yang Zhang, Hairui Yang, Junfu Lyu, Hai Zhang, Coal Combustion and NO_x Emissions in a CFB Combustor with Fine Bed Materials Around 100 μm Tsinghua University
14:20-14:40	(E-067) Azka Rizwana Siddiqui, Anna Köhler, Diana Carolina Guío-Pérez, David Pallarès, SIGNIFICANCE OF THE GAS RELEASE ON THE MIXING OF LARGER PARTICLES IN BUBBLING FLUIDIZED BEDS Chalmers University of Technology, Gothenburg, Sweden.	(B-159) Dongwang Zhang, Qiang Song, Hairui Yang, Rushan Bie, Man Zhang, Study on the mechanism of thermal inertia action in circulating fluidized bed boiler Harbin Institute of Technology	(E-082) Dmitry Klimov, Alternative bed materials for high alkali fuels and torrefaction of biomass: does it reduce the risks of fuel ash slagging, bed agglomeration, fouling and corrosion in combustion National Research University "Moscow Power Engineering Institute"-scientific center "Wear resistance", Russia
14:40-15:00	(A-056) Liu Jianwei, Liu Zhongyuan, Ma Suxia, Luo Chen, Xue Qiao, The characteristics of heat transfer in the dilute phase of CFB boiler under the dynamic combined combustion of PC coal and CFB coal Shanxi Research Institute of Huairou Laboratory	(B-161) Zhihong Liu, Jinpeng Xie, Hairui Yang, Xingrong Zhou, Yanning Zhang, Man Zhang, Study on the model of volatile distribution in biomass-fired CFB boilers Harbin Institute of Technology	(E-090) Rossella Girimonte, Daniele Sofia, The relationship between solid characteristics and segregation in a ternary fluidized bed for the gasification of a waste of the olive oil industry University of Calabria, Italy
15:00-15:20	(F-051) Martin Haaf, Ari Kettunen, Edgardo Coda, Calcium Looping to Decarbonize CO₂-Intense Industries with Added Revenue Streams Sumitomo SHI FW Energia Oy, Finland	(B-166) Lei Zhang, Baojian Shen, Xinjun Huang, Wei Peng, Numerical simulation of the catalyst flow pattern of regeneration standpipe in industrial FCC unit China University of petroleum	(E-096) Zihua Tang, Guoliang Song, Weijian Song, Haiyang Wang, Yi Han, Effect of preheating modification unit air equivalent ratio on combustion and NO_x original emission in circulating fluidized bed University of Chinese Academy of Sciences
15:20-15:40	Coffee Break		

Schedule of Paper -- July 22-24, 2024

P.M. Tuesday, 23 July, 2024 (Session 6)			
ROOM	Function Room 1	Function Room 2	Function Room 3
Topics	A-Dynamics, heat and mass transfer of gas-solid flow F-Looping and energy storage processes	B-Modeling and simulation	E-Combustion, pyrolysis and gasification
Chair/Cochair	Fabrizio Scala/Jiajie Zhang	Suxia Ma/Xingxing Cheng	Hairui Yang/Georgy Ryabov
15:40-16:10	K19-- <i>David Pallarès, Carolina Guío Pérez.</i> Advanced methods for the investigation of solids mixing Division of Energy Technology, Chalmers University of Technology	K20-- <i>Daoyin Liu.</i> Utilising fluidized bed spray granulation to prepare γ-Al_2O_3/$CaCO_3$ core-shell particles for thermochemical energy storage Southeast University	K21-- <i>Xianhua Wang.</i> The research and development of biomass fluidized-bed gasification technology at HUST Huazhong University of Science and Technology
16:10-16:30	(F-010) <i>Markus Secomandi, Borja Arias, Markku Nikku, Kari Myöhänen, Jouni Ritvanen, Modelling-Based Proof-of-Concept for $Ca(OH)_2$-Enhanced CO_2 Capture in a Calcium Looping Process</i> Lappeenranta-Lahti University of Technology, Finland	(B-167) <i>Xinjun Huang, Qi Yang, Shengxian Han, Jiao He, Wei Peng, Shun Liu, Optimization simulation of cyclone separators in an industrial MTO unit</i> China University of Petroleum	(E-115) <i>Chong Liu, Lin Li, Heng Liu, Guang Sun, Tianxin Li, Lunbo Duan, Motion and combustion characteristics of single fuel particles in a bubbling fluidized bed: experimental and modeling studies</i> Southeast University
16:30-16:50	(F-078) <i>Fiorella Massa, Antonio Coppola, Fabio Montagnaro, Fabrizio Scala, The Behavior of Different Limestones for Sorption Enhanced Gasification in Presence of Steam in a Lab-Scale Twin Fluidized Bed System</i> STEMS, Consiglio Nazionale delle Ricerche, Italy	(B-171) <i>Jingda Xia, Tianqi Tang, Yurong He, Numerical simulation of wet particle system based on a two-fluid model with dynamic particle coefficient of restitution</i> Harbin Institute of Technology-School of Energy Science	(E-158) <i>Hecheng Hu, Dongwang Zhang, Tuo Zhou, Hairui Yang, Nan Hu, Man Zhang, Experimental study and process simulation on pyrolysis characteristics of decommissioned wind turbine blades</i> Tsinghua University
16:50-17:10	(F-144) <i>Qingjia Wang, Qiang Song, Hairui Wang, Tuo Zhou, Hairui Yang, Nan Hua, Man Zhang, Research on Ammonia-Cyanuric Acid Co-production Preparation Technology in Heating Boiler Denitration System</i> Changchun Institute of Technology	(B-175) <i>Weiwei Li, Regulation mechanism of chemical reaction for coal catalytic hydrogasification in fluidized bed</i> North University of China	(E-123) <i>Long Cheng, Lei Zhang, Ruixu Wang, Junnan Chao, Sahand Nekoeian, Nazanin Charchi Aghdama, Zhijie Fu, Xiaoyang Wei, Milad Taghavivand, Jiantao Li, Markus Hughesa, et al., Process analysis of a pilot scale two-stage steam-oxygen fluidized bed biomass gasifier</i> University of British Columbia, Canada
17:10-17:30	(F-052) <i>Ari Kettunen^{1*}, Martin Haaf¹, Malin Blomqvist², Magnus Lundqvist², Eemeli Anetjärvi³, Jouni Ritvanen³, A Dynamically Operated Dual CFB CaL Tailored for Carbon Capture of Future Iron & Steel Industries - Development and Model Investigation</i> Sumitomo SHI FW Energia Oy, Finland	(B-177) <i>Shiyu Bai, Yongmin Zhang, Flow-reaction coupled MP-PIC simulation in an industrial MTO regenerator</i> China University of Petroleum	(E-141) <i>Xiaofei Longa, Jianbo Lia, Shengqi Yuana, Xiaofeng Lua, Dongke Zhang, Effect of bed temperature and atmosphere on the agglomeration of quartz bed particles in a BFB burning/gasifying high alkali-fuel</i> Chongqing University
17:30-18:30	Breaks & Poster		
18:30-21:00	Banquet , Second Floor Bingzhou Function Room		

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A.M. Wednesday, 24 July, 2024 (Session 7)			
ROOM	Function Room 1	Function Room 2	Function Room 3
Topics	G-Fine particle and nano-particle systems	B-Modeling and simulation	E-Combustion, pyrolysis and gasification
Chair/Cochair	Xianhua Wang/Yong Li	Daoyin Liu/Nana Wang	Zhenshan Li/Yuchuan Feng
8:00-8:30	K22-- Suxia Ma. Study on the effects of additives to SNCR Denitrification at low temperature Taiyuan University of Technology	K23-- Ruixue Feng. Characteristics of Glass Fiber Recovery from Scrap Wind Turbine Blades by CFB Technology Taiyuan University of Technology	K24-- Georgy Ryabov. Estimation of bed drainage discharge to prevent agglomeration based on experimental data and calculations of changes in potassium content in the bed. All Russia Thermal Engineering Institute, Russia
8:30-8:50	(G-014) <i>Wenhan Yu, Feng Chen, Minghua Li, Haiyu Cao, Xiaolin Wu, Zhongli Ji</i> , Optimization of dust holding capacity of high efficiency filter media in high dust environment Beijing Key Laboratory of Process Fluid Filtration and Separation, College of Mechanical and Transportation Engineering, China University of Petroleum, Beijing	K29-- Jianbo Li. Technical Approaches to Understanding Agglomeration of Bed Particles during CFB Thermal Conversion of High-alkali Fuel Chongqing University	(E-143) <i>Miriam Huber, Florian Benedikt, Daniel Hochstöger, Katharina Fürsatz, Matthias Binder, Matthias Kuba, Christoph Pfeifer, Tobias Pröll, Thomas Karl Hannl</i> , Waste valorization via advanced dual fluidized bed gasification University of Natural Sciences and Life Sciences, Vienna
8:50-9:10	(G-027) <i>Jiaying Wang, Yuanyuan Shao, Jesse Zhu</i> , Fluidization of Nano-modulated Group C Particles in a Circulating Fluidized Bed (Video for the presentation) Tianjin University	(B-179) <i>Yong Zhang, Wei Ge</i> , Study of Dynamic Multiscale Simulation for Gas-solid Flow University of Chinese Academy of Sciences	(E-145) <i>Florian J. Müller, Camila Rodríguez Molano, Eugen Schöfbänker, Franz Winter</i> , Surface adjustment of biochar by CO₂ gasification under fixed and fluidized bed conditions Technische Universität Wien, Austria
9:10-9:30	(G-109) <i>Zhi Cheng Hua, Robert Kräuter, Stefan Heinrich</i> , JET assisted fluidized bed production of battery hetero aggregates with structural analysis Hamburg University of Technology, Germany	(B-187) <i>Xuefeng Xiang, Yanfen Huang</i> , Application of CPFD Method in Fluidization Process Beijing Hi-key Technology	(E-157) <i>Pengxing Yuan, Shiyi Chen, Wenguo Xiang, Meng Li, Lei Zhang</i> , Reaction characteristics of calcination and decomposition of phosphogypsum in a bubbling fluidized bed Southeast University
9:30-9:50	(G-146) <i>Jing Guo, Bingkang Niu, Huifang Lou, Zhengyi Chao, Youzi Liu</i> , Atomic layer deposition ultrathin amorphous TiO₂ film in a fluidized bed reactor for improving the weatherability of TiO₂ pigment North University of China	(B-200) <i>Jinglu Yan, Niannian Liu, Yinquan Sui, Mengying Sun, Zhitong Xu, Huanpeng Liu</i> , Shielding Effect of Fractal Nanoparticle Agglomerates Aligned Streamwise University of Bristol, United Kingdom	(E-116) <i>Tianxin Li, Lin Li, Chong Liu, Heng Liu, Guang Sun, Lunbo Duan</i> , Ammonia-coal co-firing behavior and nitrogen oxide emission in fluidized bed combustor Southeast University
9:50-10:10	Coffee Break		

Schedule of Paper -- July 22-24, 2024

A.M. Wednesday, 24 July, 2024 (Session 8)			
ROOM	Function Room 1	Function Room 2	Function Room 3
Topics	G-Fine particle and nano-particle systems E-Combustion, pyrolysis and gasification	C-Measurements and instrumentation	E-Combustion, pyrolysis and gasification
Chair/Cochair	Xianhua Wang/Yong Li	Daoyin Liu/Nana Wang	Zhenshan Li/Yuchuan Feng
10:10-10:40	K25-- Runxia Cai. Green hydrogen production from biogenic feedstocks via redox-activated CO₂ sorbents. Shanghai Jiao Tong University	K26-- Lennard Lindmüller. Particle Movement in a Circulating Fluidized Beds via Electrical Capacitance Volume Tomography and Particle Imaging Velocimetry. Hamburg University of Technology, Germany	K27-- Man Zhang. Clean and Efficient Thermal Conversion of Biomass for Green Methanol Preparation. Tsinghua University
10:40-11:10	K28-- Zhijie Fu, Xiaotao Bi. Hot Syngas Cleanup for the Fluidized Bed Biomass Gasification to Renewable Natural Gas. China University of Mining & Technology; University of British Columbia, Canada	(B-044) Mika Liukkonen, Swetha Authilingam, Ari Kettunen. Improving the management of combustion balance in a cfb by advanced analytics Sumitomo SHI FW Energia Oy (SFW) , Finland	K30- Florian Benedikt, Thomas Karl Hannl, Gregor Karte, Miriam Huber, Tobias Pröll, Christoph Pfeifer. Past, Present & Future of Dual Fluidized Bed Gasification BOKU University, Institute of Chemical and Energy Engineering BEST - Bioenergy and Sustainable Technologies GmbH, Austria
11:10-11:30	(G-164) Daniele Sofia, Rossella Girimonte, Efficient Powder Reuse in Selective Laser Sintering Process via Fluidized Bed System University of Calabria, Italy	(C-009) Kun Li, Hanqiao Che, Yan Han, Ping Chen, Positron emission particle tracking: outstanding 3D imaging of particle motion in opaque flows North University of China	(E-160) Lu Wang, Dongwang Zhang, Tuo Zhou, Hecheng Hu, Hairui Yang, Nan Hu, Man Zhang, Experimental study on microwave pyrolysis of decommissioned wind turbine blades based on SIC absorbent Tsinghua University
13:20-11:50	(H-202) Yuping Li, Qigang Deng, Meng Dong, Min Huang, Lixiao Wei, Binbin Qiu, Hu Su, Jiayi Lu. Design of a New Type of CFB Boiler Burning The High Alkali and High Chlorine Coal. Dongfang Boiler CO., LTD	(C-140) Ao Tang, Kai Zhang, Mengshi Wang, Taiyi Ca, Wu Zhou, Xiangrui Dong, Analysis of Particle Fluidization Behavior in Micro Fluidized Beds Based on Imaging Methods University of Shanghai for Science and Technology	(E-163) Chaoran Li, Tong Wang, Man Zhang, Tuo Zhou, Hairui Yang, Volatile releasing and ignition during oxy-combustion in fluidized bed Tsinghua University
11:50-12:10		(C-147) Zhiyang Ma, Yi Xu, Qiuya Tu, Haigang Wang, Particle tracking velocimetry investigation of wet particle flow characteristics in a pseudo two-dimensional fluidized bed Chinese Academy of Sciences	(E-172) Linlin Duan, Yiming Zhang, Shuai Pan, Chongchong Zhang, Fei Zhao, Cenfan Liu, Yongmin Zhang, Research on combustion stability and emission characteristic of co-flow jet flame blended with propane VOCs China University of Petroleum (Beijing)
14:00-18:00	Technical tour, Free Bus at the entrance of Bingzhou Hotel		

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THE EIGHTH INTERNATIONAL SYMPOSIUM ON SPOUTED BEDS, ISSB-8	
Taiyuan Bingzhou Hotel, Function Room 5	
July 21-24, 2024	
P.M. Monday, 22 July 2024, Third Floor Function Room 5	
Session 1	
Chair	<i>Professor Xiaotao Bi</i>
13:30-13:50	<i>Organizing committee, Opening of the symposium</i>
13:50-14:20	<i>Malin Liu, Multiscale study of fluidized bed-chemical vapour deposition process in nuclear fuel coated particle fabrication for advanced nuclear reactor</i>
14:20-14:50	<i>Mayra A. Suarez, Laura Santamaria, Leire Olazar, Irati Garcia, Gartzten Lopez, Martin Olazar*, Maider Amutio, Pyrolysis and in-line oxidative steam reforming of different plastics in a tandem conical spouted bed-fluidized bed reactor</i>
14:50-15:10	<i>Dening (Eric) Jia*, Xiaotao Bi, C. Jim Lim, Shahab Sokhansanj and Atsushi Tsutsumi, Bed-to-surface heat transfer in a tapered fluidized bed of biomass particles with pulsed gas flow</i>
15:10-15:40	<i>Coffee Break</i>
Session 2	
Chair	<i>Professor Martin Olazar</i>
15:40-16:10	<i>Ziliang Wang*, Zhiwei Chen, Jim Lim, Slot-rectangular spouted bed: hydrodynamics and its application</i>
16:10-16:30	<i>Xabier Sukunza, Maider Bolaños, Mikel Tellabide*, Idoia Estiati, Roberto Aguado, Martin Olazar, Hydrodynamic study of beds made of pistachio nuts: ascertaining the configurations leading to stable operation in the thermal splitting of pistachios</i>
16:30-16:50	<i>Zhiwei Chen*, A two-dimensional lattice gas automata for the simulation of gas-solid flow in spouted beds</i>
16:50-17:10	<i>Maider Bolaños*, Alvaro Cano, Xabier Sukunza, Idoia Estiati, Mikel Tellabide, Haritz Altzibar, Miriam Arabiourrutia, Martin Olazar, Stereo-PTV technique for assessing the 3D displacement of particles in conical spouted beds</i>
17:10-17:30	<i>Arif Eren Özdemir, Can Akıcı, Murat Köksal, Görkem Külah*, Experimental investigation of conical spouted bed thermal solar receivers</i>
17:00-18:30	<i>Breaks & Poster</i>
18:30-20:00	<i>Dinner</i>
20:00-21:00	<i>Committee Meeting (First Floor Function Room 1)</i>

A.M. Tuesday, 23 July 2024, Third Floor Function Room 5	
Session 3	
Chair	<i>Professor Xiaojun Bao</i>
8:00-8:30	<i>Thaar M. Al-Juwaya, Neven Ali, Muthanna Al-Dahhan*, A review of the hydrodynamics and scale-up of the TRISO spouted bed coater</i>
8:30-8:50	<i>R. Raman, P. K. Mollick, A. B. Pandit*, P. S. Goswami, Effect of bi-dispersed particulate bed on hydrodynamics of rectangular spouted bed</i>
8:50-9:10	<i>Thaar M. Al-Juwaya, Neven Ali, Muthanna Al-Dahhan*, Investigating gas-Solid cross-sectional distributions in spouted beds using state-of-the-art non-invasive Gamma-ray Computed Tomography (CT) imaging technology</i>

Schedule of Paper -- July 22-24, 2024

9:10-9:30	<i>Xinxin Che, Feng Wu*</i> , Junwu Wang, Xiaoxun Ma, Multiple field synergy mechanism of the desulfurization process in the intensified spouted beds
9:30-9:50	<i>Dongsheng Jiao, Tong Zhang, Liangzhi Xia*</i> , Study on the drying characteristics of pneumatic-spouted beds and the enhanced heat transfer effect of heat pipes
9:50-10:20	Coffee Break
Session 4	
Chair	<i>Dr. Mikel Tellabide</i>
10:20-10:50	<i>Cristina Moliner, Valerio Carozzo, Massimo Curti, Elisabetta Arato*</i> , Spouted bed reactors: trends and gaps of 70 years of technology
10:50-11:10	<i>Zexin Zhong, Xiaoke Ku*</i> , Motion and drying characteristics of wet particles in a spouted bed
11:10-11:30	<i>Arif Eren Özdemir, Görkem Külah, Murat Köksal*</i> , CFD-DEM modelling of conical spouted bed solar thermal receivers
11:30-11:50	<i>Youzhi Yi, Feng Wu*</i> , Xinxin Che, Effect of combining swirling devices on drying of wet particles in spouted beds
11:50-12:10	<i>Organizing committee</i> , Closing of the symposium
12:10-13:30	Lunch

P.M. Tuesday, 23 July 2024, Third Floor Function Room 5

Session 5	
Chair	<i>Dr. Zhiwei Chen</i>
13:30-13:40	<i>Xabier Sukunza*</i> , Maider Bolaños, Mikel Tellabide, Idoia Estiati, Roberto Aguado, Martin Olazar, Effect of operating and geometric parameters on the thermal splitting of pistachio nuts in a fountain confined conical spouted bed dryer
13:40-13:50	<i>Guilherme Henrique Alves Pinto, Xabier Sukunza, Martin Olazar, José Teixeira Freire and Fábio Bentes Freire*</i> , Drying of orange juice waste in a mechanically stirred spouted bed
13:50-14:00	<i>Manomita Mollick, Laura Santamaria, Pablo Comendador, Maider Amutio, Maite Artetxe, Enara Fernandez, Martin Olazar, Gartzon Lopez*</i> , Steam cracking of polypropylene for the production of light olefins in a fountain confined conical spouted bed reactor
14:00-14:10	<i>Maider Bolaños*</i> , Xabier Sukunza, Idoia Estiati, Mikel Tellabide, Haritz Altzibar, Miriam Arabiourrutia, Martin Olazar, Cross-sectional spout expansion in fine particle fountain confined conical spouted beds equipped with open-sided draft tubes
14:10-14:20	<i>Yu Kang, Wei Zhang*</i> , Yuming Zhang, Jiazhou Li, Zhewen Chen, A CFD-DEM study on the mixing behavior of binary nonspherical particles inside a spouted-fluidized bed
14:20-14:30	<i>Qiusheng Zhong, Wei Zhang*</i> , Yuming Zhang, Jiazhou Li, Zhewen Chen, A CFD-DAEM coupled Numerical simulation on the biomass pyrolysis and gasification inside a spouted-bed
14:30-14:40	<i>Xabier Sukunza*</i> , Konrad Rojcewicz, Aimar Martín, Maider Bolaños, Mikel Tellabide, Fabian Dajnowiec, Zbigniew Oksiuta, Martin Olazar, Modelling of a fountain bed dryer for maximising its drying efficiency
14:40-14:50	<i>Kun Jiang, Hui Jin*</i> , Numerical simulation on hydrodynamic and heat transfer in a Pseudo 2D spouted bed using supercritical CO₂ as fluidizing agent: Sensitivity analysis
14:50-15:00	<i>P. K. Mollicka*</i> , M. Olazar, A. Arya, A. B. Pandit, Insignificant conduction at high temperature operation of gas-solid spouted beds
15:10-15:40	Coffee Break
Session 6	

Schedule of Paper -- July 22-24, 2024

15:40-17:00	<i>Poster view session</i>
17:00-18:30	<i>Breaks</i>
19:00-21:00	<i>Banquet Second Floor Bingzhou Function Room</i>

Poster No.	Authors/Title/Affiliation (CFB-14)
P1	(A-021) Suyoung Kim, Chae Eun Yeo, Geunhye Won, Sung Won Kim. Effect of gas-inlet geometry on hydrodynamics in a small-diameter riser of circulating fluidized bed Department of IT&Energy Convergence, Department of Chemical and Biological Engineering, Korea
P2	(A-032) Ting Xiong, Yongkang Yang, Zhenlong Fang, Yong Chen. Drag and heat transfer coefficients for oblate ellipsoids near the wall Wuhan University of Technology
P3	(A-098) Mingzhu Lv, Min Wang, Yunpeng Zhao, Xiaogang Shi*, Xingying Lan, Jinsen Gao. Simulation analysis of different simplified modeling methods for riser in the full loop circulating fluidized bed China University of Petroleum (Beijing)
P4	(A-103) Siqi Zheng, Xiaofang Wang, Guotao Qin, Zhiping Zhu. Study on drying characteristics and reduction kinetics of laterite nickel ore Chinese Academy of Sciences
P5	(A-182) He Meng, Jian-Yi Chen*, Ming-Qian Cao, Yao-Dong Wei. Experimental study of particle motion and collision within ash bands in cyclone separators China University of Petroleum, Beijing
P6	(B-122) Zhengquan Tang, Jian Wang, Mingzong Liu. Numerical study of gas and powder flow characteristics in a filled bed Anhui University of Science and Technology
P7	(B-133) Xu Li, Zhongli Tang, Donghui Zhang, Wenbin Li. Modeling of Flow Hydrodynamics in a Novel Circulating Turbulent Fluidized Bed Tianjin University
P8	(E-007) Chun Wang, Qi Chen, Haiping Yang, Yingquan Chen, Hanping Chen, Xianhua Wang. Numerical Simulation of Tar Conversion Process in Biomass Fluidized Bed Gasification Based on MP-PIC Method Huazhong University of Science and Technology
P9	(E-020) Wenzheng Liang, Yupeng Feng, Cuiping Wang*, Hairui Yang. Kinetics of Sewage Sludge Particle Fast Pyrolysis Shandong University of Science and Technology
P10	(E-107) Xinyu Yuan, Zhiping Zhu*, Xiaofang Wang, Xiaobin Qi*, Chen Chen. Experimental study on the co-production of gas and char during the partial gasification of biomass in a bench-scale circulating fluidized bed gasifier Chinese Academy of Sciences
P11	(E-108) Xuefei Zhang, Zhao Yang*, Zhiping Zhu. Combustion characteristics and physicochemical properties of entrained flow coal gasification fine slag University of Chinese Academy of Sciences
P12	(F-058) Yang Wang, Qiran Geng, Zhenshan Li. Modified Perovskite Oxygen Carrier for Application in Chemical Looping Combustion Tsinghua University
P13	(H-201) Liu Xinglei, Wei Geng, Li Weicheng, Lin Shanhu, Guo Qiang, Zhou Qi, Nie Li. Investigation of combustion characteristics of lignite in circulating fluidized bed Dongfang Bioler Co., Ltd
P14	(H-148) Min Cai, The riser reactor with a multi-stage oxygen feeding strategy for the oxidative coupling of methane China University of Petroleum (Beijing)

Poster No.	Authors/Title/Affiliation (ISSB-8)
P1	(P-018) <i>Sukunza Xabier</i> . Effect of operating and geometric parameters on the thermal splitting of pistachio nuts in a fountain confined conical spouted bed dryer University of the Basque Country, Spain
P2	(P-029) <i>Olazar Martin</i> . Drying of Orange Juice Waste in a Mechanically Stirred Spouted Bed Federal University of São Carlos, São Carlos, SP, Brazil
P3	(P-020) <i>Maidier Bolaños*</i> , <i>Xabier Sukunza</i> , <i>Idoia Estiati</i> , <i>Mikel Tellabide</i> , <i>Haritz Altzibar</i> , <i>Miriam Arabiourrutia</i> , <i>Martin Olazar</i> . Cross-sectional spout expansion in fine particle fountain confined conical spouted beds equipped with open-sided draft tubes University of the Basque Country, P.O. Box 644, 48080 Bilbao, Spain
P4	(P-026) <i>Yu Kang</i> , <i>Wei Zhang*</i> , <i>Yuming Zhang</i> , <i>Jiazhou Li</i> , <i>Zhewen Chen</i> . A CFD-DEM study on the mixing behavior of binary nonspherical particles inside a spouted-fluidized bed China University of Petroleum, Beijing
P5	(P-027) <i>Qiusheng Zhong</i> , <i>Wei Zhang*</i> , <i>Yuming Zhang</i> , <i>Jiazhou Li</i> , <i>Zhewen Chen</i> . A CFD-DAEM coupled Numerical simulation on the biomass pyrolysis and gasification inside a spouted-bed China University of Petroleum, Beijing
P6	(P-007) <i>Xabier Sukunza</i> . Modelling of a fountain bed dryer for maximising its drying efficiency University of the Basque Country, Leioa, Spain
P7	(P-004) <i>Kun Jiang</i> , <i>Hui Jin*</i> . Numerical simulation on hydrodynamic and heat transfer in a Pseudo 2D spouted bed using supercritical CO₂ as fluidizing agent: Sensitivity analysis Xi'an Jiaotong University, China
P8	(P-030) <i>Olazar Martin</i> . Insignificant Conduction at High Temperature Operation of Gas-Solid Spouted Beds University of the Basque Country, Leioa, Spain
P9	(P-014) <i>Lin Jiang</i> , <i>Yu Tian</i> , <i>Rongzheng Liu</i> , <i>Bing Liu</i> , <i>Youlin Shao</i> , <i>Malin Liu*</i> . CFD-DEM simulation study of particle coating process using a heterogeneous layer model in a conical spouted bed Tsinghua University, Beijing, China
P10	(P-015) <i>Yu Tian</i> , <i>Lin Jiang</i> , <i>Rongzheng Liu</i> , <i>Youlin Shao</i> , <i>Bing Liu</i> , <i>Malin Liu*</i> . CFD-DEM simulation study of fluidization behavior in spout bed using contact coefficients calculated by MD Tsinghua University, Beijing, China
P11	(P-028) <i>Juan F. Saldarriaga^{1,2*}</i> , <i>Julián E. López³</i> , <i>Roberto Aguado²</i> , <i>Martín Olazar²</i> . Obtaining caffeine from the drying of coffee grounds in a spouted bed reactor ¹ Universidad de los Andes, Bogotá, Colombia ² University of the Basque Country UPV/EHU, Leioa, Spain.