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Education

- ♦ **Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China (2013.9-2016.7)**

Ph.D. Degree, AET group, State Key Laboratory of Multiphase Complex Systems; Supervisor: Prof. Shiqiu Gao and Prof. Guangwen Xu

- ♦ **Taiyuan university of technology, Taiyuan, China (2008.9-2011.7)**

M.E Degree, Key Laboratory of Coal Science and Technology Supervisor: Prof. Ju Shangguan

- ♦ **North University of China, Taiyuan, China (2004.9-2008.7)**

B.Sc. Degree, Department of Chemical Engineering

Work Experience

- ❖ **Polytechnique Montreal, Montreal, QC, Canada,** Research Associate 2021.8-now
- ❖ **Polytechnique Montreal, Montreal, QC, Canada,** Postdoc 2018.12- 2021.8
Cooperation Supervisor: Prof. Jamal Chaouki
- ❖ **Institute of Process Engineering, Chinese Academy of Sciences, Beijing, China**
Research associate 2018.10-2018.12
- ❖ **Tsinghua University, Beijing, China** Postdoc 2016.9-2018.9
Cooperation Supervisor: Prof. Weizhong Qian
- ❖ **Energy Research Institute, ENN group,** Engineer 2011.7-2013.8
Langfang Hebei, China

Research Interests

- Microwave-responsive materials for catalysis
- Catalytic recycling of plastic wastes for high-value products
- Chemical looping ammonia production process
- Thermal and catalytic conversion of carbon resources
- Innovative design of reactor structure and its applications in thermal and catalytic process

Journal Publications

1. **Zhaohui Chen**, Mohammad Monzavi, Mohammad Latifi, Said Samih, Jamal Chaouki*. Microwave-responsive SiC foam@zeolite core-shell structured catalyst for catalytic pyrolysis of plastics. (Submitting)
2. **Zhaohui Chen***, Deliang Wang, Hang Yang, Yusheng Zhang, Yunjia Li, Changming Li, Jian Yu, Shiqiu Gao*. Novel application of red mud as disposal catalyst for pyrolysis and gasification of coal. *Carbon Resource Conversion*, 2021, 4: 10-18
- 3.
4. Deming Wang, **Zhaohui Chen***, Changming Li, Deliang Wang, Yunjia Li, Hang Yang, Zhouen Liu, Jian Yu, Shiqiu Gao*. High-quality tar production from coal in an integrated reactor: Rapid

pyrolysis in a drop tube and downstream volatiles upgrading over char in a moving bed. *Fuel*, 285: 119156.

5. **Zhaohui Chen**, Yong Tian, Dengguo Lai*, Jinhui Zhan, Zhennan Han, Guangwen Xu*, Shiqiu Gao. Oil shale pyrolysis in a moving bed with internals enhanced by rapid preheating in a heated drop tube. *Energy Conversion and Management*, 2020, 224: 113358.
6. **Zhaohui Chen**, Deming Wang, Changming Li, Hang Yang, Deliang Wang, Dengguo Lai, Shiqiu Gao*. A tandem pyrolysis-upgrading strategy in an integrated reactor to improve the quality of coal tar. *Energy Conversion and Management*, 2020, 220: 113065.
7. **Zhaohui Chen**, Huiqiu Wang, Wenglong Song, Yilin Hou, Weizhong Qian*. Decentralized methanol feed in a two-stage fluidized bed for process intensification of methanol to aromatics. *Chemical Engineering and Processing: Process Intensification*, 2020, 154: 108049.
8. **Zhaohui Chen**, Wenglong Song, Yilin Hou, Huiqiu Wang, Chenxi Zhang, Jian Wang, Fengyi Yang, Weizhong Qian*. Temperature-dependent secondary conversion of primary products from methanol aromatization in a two-stage fluidized bed. *Fuel*, 2020, 267: 117204.
9. **Zhaohui Chen***, Yilin Hou, Fengyi Yang, Dali Cai, Wenlong Song, Ning Wang, Weizhong Qian*. A multi-stage fluidized bed strategy for the enhanced conversion of methanol into aromatics. *Chemical Engineering Science*, 2019, 204: 1-8.
10. **Zhaohui Chen***, Yilin Hou, Wenlong Song, Dali Cai, Fengyi Yang, Yu Cui, Weizhong Qian*. High-yield production of aromatics from methanol with a temperature shift, three-stage fluidized bed reactor technology, *Chemical Engineering Journal*, 2019, 371: 639-646
11. Deliang Wang, **Zhaohui Chen***, Zhimao Zhou, Wang Demin, Jian Yu, Shiqiu Gao*. Catalytic upgrading of volatiles from coal pyrolysis over sulfated carbon-based catalysts from waste red oil. *Fuel Processing Technology*, 2019, 189: 98-109
12. Deliang Wang, Demin Wang, Jian Yu, **Zhaohui Chen***, Yunjia Li, Shiqiu Gao*. Role of alkali sodium on the catalytic performance of red mud during coal pyrolysis. *Fuel Processing Technology*, 2019, 186: 81-87.
13. **Zhaohui Chen**, Yunjia Li, Dengguo Lai, Sulong Geng, Qi Zhou, Shiqiu Gao*, Guangwen Xu. Coupling coal pyrolysis with char gasification in a multi-stage fluidized bed to co-produce high-quality tar and syngas. *Applied Energy*, 2018, 215: 348-355.
14. **Zhaohui Chen**, Shiqiu Gao*, Guangwen Xu*. Simultaneous production of CH₄-rich syngas and high-quality tar from lignite by the coupling of noncatalytic/catalytic pyrolysis and gasification in a pressurized integrated fluidized bed. *Applied Energy*, 2017, 208: 1527-1537.
15. **Zhaohui Chen**, Qingmeng Dun, Yong Shi, Dengguo Lai, Yang Zhou, Shiqiu Gao*, Guangwen Xu. High quality syngas production from catalytic coal gasification using disposable Ca (OH)₂ catalyst. *Chemical Engineering Journal*, 2017, 316: 842-849.
16. **Zhaohui Chen**, Yong Shi, Dengguo Lai, Shiqiu Gao*, Zhen Shi, Yong Tian, Guangwen Xu. Coal rapid pyrolysis in a transport bed under steam-containing syngas atmosphere relevant to the integrated fluidized bed gasification. *Fuel*, 2016, 176: 200-208.
17. **Zhaohui Chen**, Dengguo Lai, Liqiang Bai, Yong Tian, Shiqiu Gao*, Guangwen Xu*, Atsushi Tsutsumi. Methane-rich syngas production in an integrated fluidized bed by coupling pyrolysis and gasification of low-rank coal. *Fuel Processing Technology*, 2015, 140: 88-95.
18. **Zhaohui Chen**, Shiqiu Gao*, Guangwen Xu. Analysis and control methods of coal pyrolysis process. *CIESC J.*, 2017, 68(10): 3693-3707.
19. **Zhaohui Chen** Dun QM, Shi Y, et al. Effects of pyrolysis temperature and atmosphere on rapid

- coal pyrolysis in transport bed reactor. *CIESC J.*, 2016, 68(4), 1566-1573.
20. **Chen ZH**, Liu L, Jin YD, et al. Pressurized catalytic gasification of high ash fusion temperature coal: catalytic activity of K_2CO_3 and K recovery. *CIESC J.*, 2017, 68(5): 2155-2161.
 21. **Zhaohui Chen**, Liu L, Wu H, et al. Effect of $Ca(OH)_2$ catalyst on catalytic coal gasification and methanation. *J. Fuel Chem. Technol.*, 2016, 44(10): 1160-1167.
 22. **Zhaohui Chen**, Shangguan J, Zhang L, et al. Formation of carbonyl sulfide in removal of hydrogen sulfide using metal oxide sorbents. *Modern Chem. Ind.*, 2011, 32(1): 244-249.
 23. Lai DG, **Zhaohui Chen**, Shi Y, et al. Pyrolysis of oil shale by solid heat carrier in an innovative moving bed with internals. *Fuel*, 2015, 159: 943-951.
 24. Lai DG, **Zhaohui Chen**, Lin LX, et al. Secondary cracking and upgrading of shale oil from pyrolyzing oil shale over shale ash. *Energy Fuel*, 2015, 29(4): 2219-2226.
 25. Huangfu L, **Zhaohui Chen**, Li C, et al. The Denitration and Dedusting Behavior of Catalytic Filter and Its Industrial Application in Glass Kilns. *Catalysts*, 2020, 10(12): 1394.
 26. Dun QM, **Zhaohui Chen**, Huang FL, et al. Influences of temperature and residence time on secondary reactions of volatiles from coal pyrolysis. *Chin. J. Process Eng.*, 2018, 18(1): 140-147.
 27. Song W, Hou Y, **Zhaohui Chen**, et al. Process simulation of the syngas-to-aromatics processes: Technical economics aspects. *Chemical Engineering Science*, 2020, 212: 115328.
 28. Yang Y, Hou Y, **Zhaohui Chen**, et al. Enhanced production of aromatics from propane with a temperature-shifting two-stage fluidized bed reactor. *RSC advances*, 2019, 9(45): 26532-26536.
 29. Shi Y, Lai DG, **Zhaohui Chen**, et al. Co-pyrolysis characteristics of Shenmu bituminous coal and Huadian oil shale. *Chin. J. Process Eng.*, 2016, 16(4): 634-638.
 30. Shi Z, Cheng S, **Zhaohui Chen**, et al. Distribution of products and migration of main elements during pyrolysis of shenmu bituminous coal. *Chin. J. Process Eng.*, 2016, 16(5): 802-811.
 31. Lai DG, Zhan JH, **Zhaohui Chen**, et al. Oil shale pyrolysis by solid heat carrier in internal-structured moving bed. *CIESC J.*, 2017, 68(10): 3647-3657.
 32. Shen K, Wang N, Chen X, **Zhaohui Chen**, et al. Seed-induced and additive-free synthesis of oriented nanorod-assembled meso/macroporous zeolites: toward efficient and cost-effective catalysts for the MTA reaction. *Catal. Sci. Technol.*, 2017, 7(21): 5143-5153.
 33. Wang N, Hou YL, Sun WJ, Cai DL, **Zhaohui Chen**, et al. Modulation of b-axis thickness within MFI zeolite: Correlation with variation of product diffusion and coke distribution in the methanol-to-hydrocarbons conversion. *Appl. Catal. B: Environ.*, 2019 243: 721-733.
 34. Cai DL, Hou YL, Zhang CX, Wang N, **Zhaohui Chen**, et al. Analyzing transfer properties of zeolites using small-world networks. *Nanoscale*, 2018, 10: 16431-16433.
 35. Xu SP, Zeng X, Han ZN, Cheng JG, Wu RC, **Zhaohui Chen**, et al. Quick pyrolysis of a massive coal sample via rapid infrared heating. *Appl. Energy*, 2019, 242: 732-740.
 36. Li, Y., Zhang, X., Huangfu, L., Yu, F., **Zhaohui Chen.**, Li, C., ... & Gao, S.. The simultaneous removal of SO_2 and NO from flue gas over activated coke in a multi-stage fluidized bed at low temperature. *Fuel*, (2020) 275, 117862.
 37. Cai DL, Wang N, Chen X, Ma YH, Hou YL, Zhang CX, **Zhaohui Chen**, et al. Highly selective conversion of methanol to propylene: design of an MFI zeolite with selective-blockage of (010) surfaces[J]. *Nanoscale*, 2019, 11: 8096-8101

Patents

1. **Zhaohui Chen**, Jamal Chaouki. Catalyst for microwave pyrolysis of plastic wastes and associated pyrolysis process of plastic wastes (United States Provisional Patent application No. 63/200.697)
2. **Zhaohui Chen**, Jamal Chaouki. Falling film reactor for microwave-assisted cracking of a plastic feedstock and related process. (United States Provisional Patent application No. 63/166.707)
3. A preparation method of raw material for catalytic coal gasification. CN201210219747.7
4. A method of extraction aluminum oxide from coal ash. CN201310273115.3
5. A combined method of catalyst recovery and aluminum compound separation from coal ash. CN201310273146.9
6. A method of catalyst loading and its recovery for coal gasification. CN201410251387.8
7. Continuous reaction-regeneration system and method of a three-stage fluidized bed based on methanol to aromatics CN201810826662.2
8. A method of a two-stage fluidized bed reactor for syngas to aromatics. CN 201711384742.9
9. A two-stage pyrolysis device and method for solid fuel. CN201810449777.4
10. A two-stage circulating fluidized bed reaction-regeneration system and method for the preparation of aromatics from syngas. CN201810332927.3
11. Preparation method and use of a red mud-base semi-coke catalyst, CN201811317124.7
12. A preparation method of raw material and its application in catalytic gasification. CN201210132896.X
13. Raw material preparation and its application in catalytic coal gasification. CN201310226491.7
14. A kind of raw material for catalytic coal gasification and its processing and application method. CN201310226495.5

Reviewer Responsibilities

Academic Journals: Appl. Energy, Chem. Eng. J., Fuel, Fuel Process Technol., etc