



## Profile

Dai Zhenghua, Professor and PhD Supervisor at East China University of Science and Technology, is mainly engaged in the research and development of entrained-flow gasification. Prof. Dai established the integration and optimization model of gasification system, which has been widely used in OMB gasification technology. And Prof. Dai successfully developed SE coal-water slurry gasification technology and hydrocarbon partial oxidation technology.

## Research Field

Process system simulation and optimization

Development of entrained flow coal gasification technology

Development of non-catalytic partial oxidation of gaseous hydrocarbons technology

## Research results and selected published papers

1. Zhenghua Dai\*, Xin Gong, Xiaolei Guo, Haifeng Liu, Fuchen Wang, Zunhong Yu. Pilot-trial and modeling of a new type of pressurized entrained-flow pulverized coal gasification technology[J]. Fuel, 2008, 87 (10–11): 2304–2313
2. Shuhang Zhang, Zhenghua Dai\*, Jianliang Xu, Haifeng Liu, Fuchen Wang. Sensitivity and safety boundary Analysis of Opposed Multi-Burner Coal Water Slurry Gasification System [J]. International Journal of Energy Research, 2019
3. Peng Qiu, Bo Huang, Zhenghua Dai\*, Fuchen Wang. Data-driven analysis and optimization of externally heat-integrated distillation columns (EHIDic)[J]. Energy, 2019, 116: 177
4. Bo Huang, Yang Li, Rui Gao, Yongfei Zuo, Zhenghua Dai\*, Fuchen Wang\*. Simultaneous optimization and heat integration of the coal-to-SNG process with a branched heat recovery steam cycle[J]. Computer and Chemical Engineering, 2018, 17(2): 117–128
5. Bo Huang, Rui Gao, Jianliang Xu, Zhenghua Dai\*, Fuchen Wang. Simultaneous heat integration and economic optimization of the coal-to-SNG process[J]. Computer and Chemical Engineering, 2018, 118: 248–260
6. Xinyu Li, Zhenghua Dai\*, Fuchen Wang\*. Characteristic Chemical Time Scale Analysis of a Partial Oxidation Flame in Hot Syngas Coflow[J]. Energy and Fuel, 2017, 31(4): 4382–4390
7. Xinyu Li, Zhenghua Dai\*, Qinghua Guo, Qinfeng Liang, Fuchen Wang\*. Experimental and numerical study of MILD combustion in a bench-scale natural gas partial oxidation gasifier[J]. Fuel, 2017, 193: 197–205
8. Xinyu Li, Zhenghua Dai\*, Yueting Xu, Chao Li, Zhijie Zhou, Fuchen Wang\*. Inverse diffusion flame of CH<sub>4</sub>-O<sub>2</sub> in hot syngas coflow, International Journal of Hydrogen Energy[J]. 2015, 40 (46): 16104–16114
9. Yu-qin Wang, Zheng-hua Dai\*, Hong Cheng, Jian-liang Xu, Fu-chen Wang. Cold modeling of a direct coupling autothermal methane reforming reactor[J]. Chemical Engineering Journal, 2011, 168 (1): 303–311
10. Chao Li, Zhenghua Dai\*, Weifeng Li, Jianliang Xu, Fuchen Wang. 3D numerical study of particle flow behavior in the impinging zone of an Opposed Multi-Burner gasifier[J]. Powder Technology, 2012, 225: 118–123
11. Yueting Xu, Zhenghua Dai\*, Chao Li, Xinyu Li, Zhijie Zhou, Guangsuo Yu, Fuchen Wang\*. Numerical simulation of natural gas non-catalytic partial oxidation reformer, International Journal of Hydrogen Energy[J]. 2014, 39 (17): 9149–9157
12. Wei Wan, Zhenghua Dai\*, Chao Li, Guangsuo Yu, Fuchen Wang. Innovative concept for gasification for hydrogen based on the heat integration between water gas shift unit and coal–water–slurry gasification unit, International Journal of Hydrogen Energy[J]. 2014, 39 (15): 7811–7818
13. Wei Wan, Zhenghua Dai\*, Guangsuo Yu, Fuchen Wang. System simulation research of two kinds of petcoke gasification process for hydrogen[J]. International Journal of Energy Research, 2014, 38 (9): 1162–1170
14. Sun, Zhonghua, Dai, Zhenghua, Zhou, Zhijie, Xu, Jianliang, Yu, Guangsuo\*. Comparative Study of Gasification Performance between Bituminous Coal and Petroleum Coke in the Industrial Opposed Multiburner Entrained Flow Gasifier[J] Energy & Fuels, 2012, 26 (11): 6792–6802
15. Sun, Zhonghua, Dai, Zhenghua, Zhou, Zhijie, Guo, Qinghua, Yu, Guangsuo\*. Numerical Simulation of Industrial Opposed Multiburner Coal-Water Slurry Entrained Flow Gasifier[J]. Industrial & Engineering Chemistry Research, 2012; 51 (6): 2560–2569
16. Li Chao, Dai Zhenghua, Sun Zhonghua, Wang Fuchen\*. Modeling of an Opposed Multiburner Gasifier with a Reduced-Order Model, Industrial & Engineering Chemistry Research [J]. 2013, 52 (16): 5825–5834