

# “2021 丝绸之路能源化工产学研用国际研讨会”

2021 Silk Road International Symposium on the Cooperation and Integration of Industry, Education, Research and Application of Energy & Chemicals

## ● Methods and Technologies for Co-firing Biomass with Pulverized Coal to Mitigate NO<sub>x</sub> and Increase the Combustion Efficiency

To optimize methods and technologies for co-firing biomass with pulverized coal to mitigate NO<sub>x</sub> and increase the combustion efficiency, the numerical models on NO<sub>x</sub> formation and destruction and combustion reactions are developed. The numerical code is improved to account for NO<sub>x</sub> formation/destruction mechanisms under air staging conditions. Two SCI papers have been published.

## ● CFD Modeling Study of Biomass Gasification in Fluidized Bed Reactors

To meet the needs of industrial production, an effective and predictive CFD model is established to describe the biomass gasification process in the fluidized bed. The influence of fluidized bed operating parameters on gasification is also analyzed. This study is based on the open-source software MFIX.

### Introduction of Cooperative Scholars



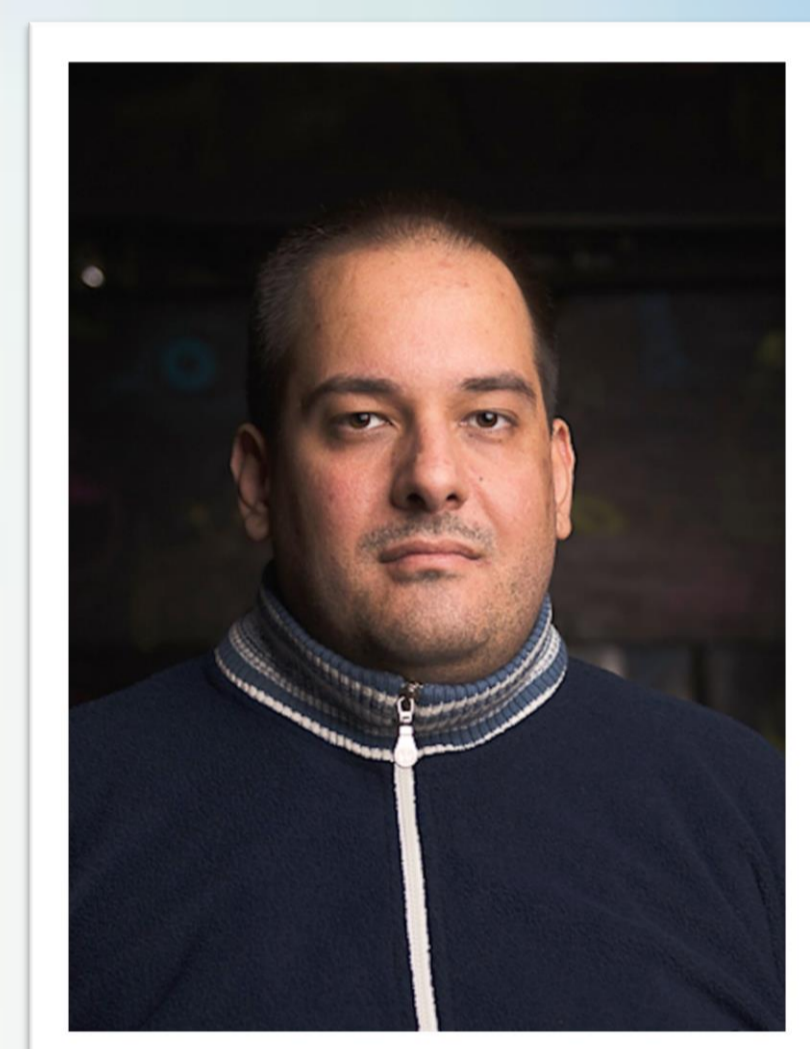
Prof.  
Defu Che



Associate Prof.  
Lei Deng



Prof.  
Srdjan Belošević

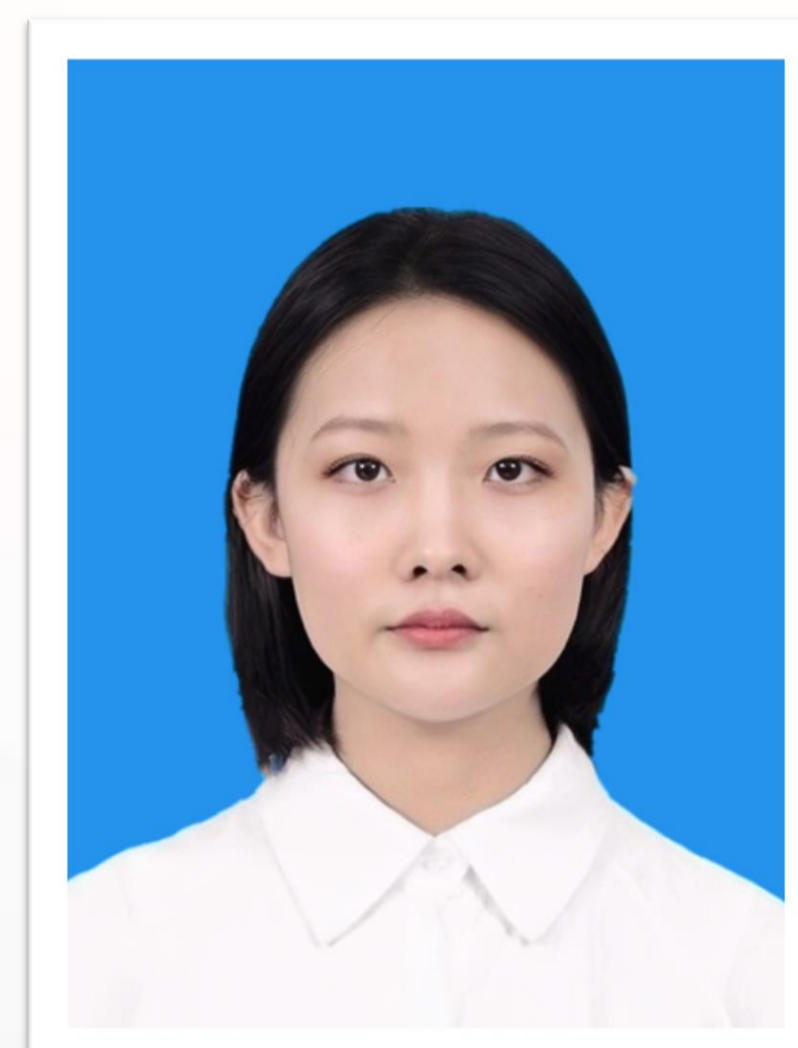


Assistant Prof.  
Ivan Tomanović

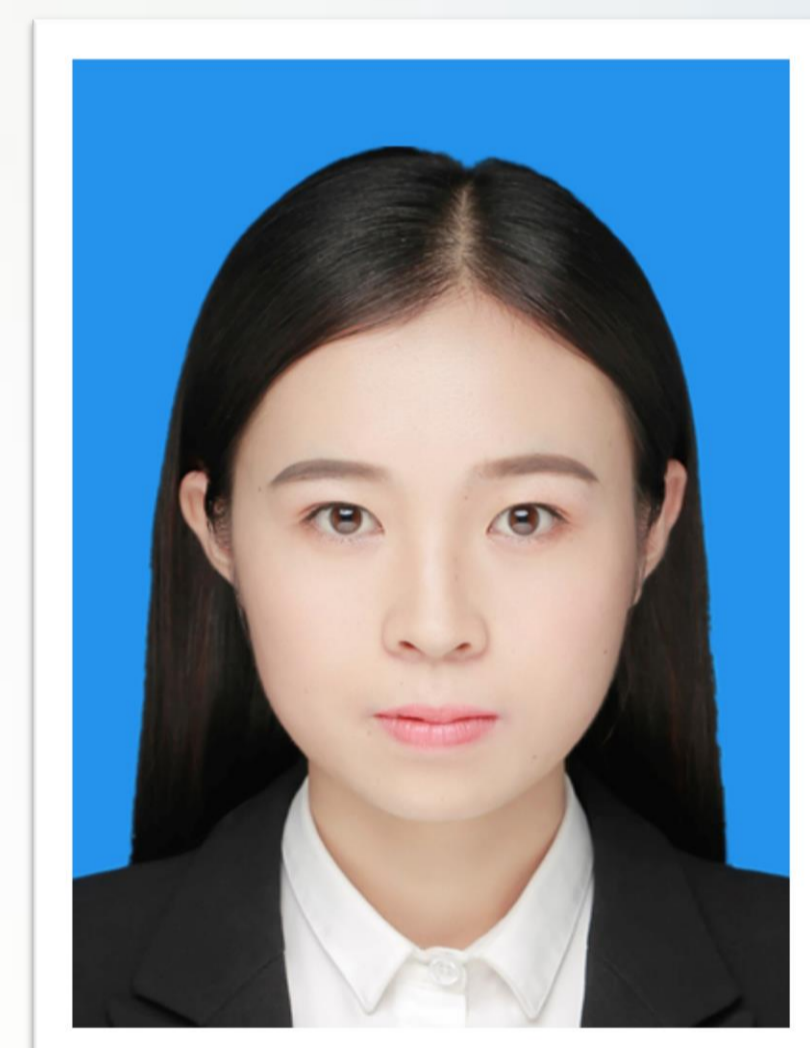
### Introduction of Students



PhD Candidate  
Maobo Yuan



Graduate Student  
Lingxiao Dong



Graduate Student  
Yan Zhang

### Key Achievements

#### Papers :

1. **Lei Deng**<sup>1\*</sup>, **Yan Zhang**<sup>1</sup>, Shihao Ma<sup>1</sup>, Zhengrong Zhu<sup>1</sup>, Hu Liu<sup>1</sup>, **Srdjan Belošević**<sup>2</sup>, **Ivan Tomanović**<sup>2</sup>, **Defu Che**<sup>1</sup>. Numerical study on combustion characteristics and heat flux distributions of 660-MW ultra-supercritical double-reheat tower-type boiler[J]. Asia-Pacific Journal of Chemical Engineering, 2021, 16 (3): e2631.

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2. **Aleksandar Milićević**<sup>1\*</sup>, **Srdjan Belošević**<sup>1</sup>, Nenad Crnomarković<sup>1</sup>, **Ivan Tomanović**<sup>1</sup>, Andrijana Stojanović<sup>1</sup>, Dragan Tucaković<sup>2</sup>, **Lei Deng**<sup>3</sup>, **Defu Che**<sup>3</sup>. Numerical study of co-firing lignite and agricultural biomass in utility boiler under variable operation conditions[J]. International Journal of Heat and Mass Transfer, 2021, 181: 121728.

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#### Project:

1. Methods and Technologies for Co-firing Biomass with Pulverized Coal to Mitigate NO<sub>x</sub> and Increase the Combustion Efficiency, cooperated between Xi'an Jiaotong University and University of Belgrade, financially supported by China-CEEC Joint Higher Education Project (Cultivation Project) (CEEC2021001).

Chinese Side		Overseas Side	
Name	Lei Deng	Name	Srdjan Belošević
Organization	Xi'an Jiaotong University	Organization	Vinča Institute of Nuclear Sciences, University of Belgrade