



# **International Conference on Environment, Renewable Energy and Green Chemical Engineering**

## **Editorial Board:**

**Chunming Yang (Hunan Normal University)**

**Haoming Chen (Nanjing University of Science and Technology)**

**Peigao Duan (Xi'an Jiaotong University)**

**Feipeng Jiao (Central South University)**

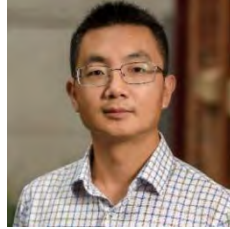
**Chang Wen (Huazhong University of Science and Technology)**



**April 22-24, 2022**

**Organized by:  
Hunan Normal University**

# Keynote Speakers



**Zhanying Zhang**  
(Queensland University of Technology)



**Shahid Hussain**  
(Jiangsu University)



**Peigao Duan**  
(Xi'an Jiaotong University)

# Sponsors

Conference Program  
Sponsored by



# Committee

## General Chairs

Prof. Chunming Yang  
Hunan Normal University, China  
Prof. Peigao Duan  
Xi'an Jiaotong University, China  
Prof. Feipeng Jiao  
Central South University, China  
Prof. Juai Wu  
Nanjing University of Posts and Telecommunications, China

## Program Chairs

Prof. Zonglin Chu  
Hunan University, China  
Prof. Zhiguo He  
Central South University, China  
Prof. Weizhi Zhou  
Shandong University, China  
Assoc. Prof. Wenjihao Hu  
Central South University, China  
Prof. Mohd Hasmadi Ismail  
Universiti Putra Malaysia, Malaysia  
Prof. Muhammed Bashir Mu'azu  
Ahmadu Bello University, Nigeria

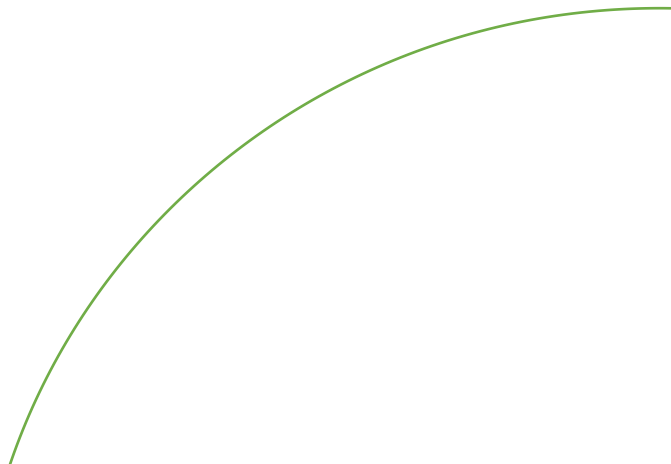
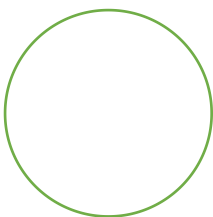
## Technical Chairs

Prof. Rajendra P. SHRESTHA  
Asian Institute of Technology, Thailand  
Prof. Chang Xu  
Hohai University, China  
Assoc. Prof. Haoming Chen  
Nanjing University of Science and Technology, China  
Assoc. Prof. Neslihan Kulözü Uzunboy  
Atatürk University, Turkey  
Assoc. Prof. Chang Wen  
Huazhong University of Science and Technology, China

## Technical Program Committees

Prof. Hanfeng Liang  
Xiamen University, China  
Prof. Lehua Zhang  
East China University of Science and Technology, China

Assoc. Prof. Mohammed Sghir TALEB  
Institut Scientifique Av Ibn Batouta, Morocco  
Prof. Xiaoping Chen  
Southeast University, China  
Prof. Francis Verpoort  
Wuhan University of Technology, China  
Assoc. Prof. Muhammad Raza Ul Mustafa  
Universiti Teknologi Petronas, Malaysia  
Dr. Xiaoping Wang  
Nanjing University, China  
Prof. Faqian Liu  
Sun Yat-sen University, China  
Prof. Guan Yang  
Zhongyuan University of Technology, China  
Assoc. Prof. Sreekanth K. J  
Kuwait Institute for Scientific Research, Kuwait  
Prof. Haifeng Sang  
Shenyang University of Technology, China  
Prof. Yonghong Chen  
Huaqiao University, China  
Dr. Samir Al Badri  
University of Baghdad, Iraq  
Prof. Jun Ye  
Hainan University, China  
Prof. Hongliang Jiang  
East China University of Science and Technology, China  
Prof. Huaqing He  
Civil Aviation University of China, China  
Dr. Thanakrit Neamhom  
Mahidol University, Thailand  
Prof. Xuhui Mao  
Wuhan University, China  
Assoc. Prof. Yunde Liu  
China University of Geosciences, China  
Dr. Hedayat Omidvar  
National Iranian Gas Company, Iran



# Preface

It was our great honor and pleasure to organize the International Conference on Environment, Renewable Energy and Green Chemical Engineering (EREGCE 2022) online on April 22nd to 24th, 2022.

As Chemical industry plays a vital role in the development process of national economy, a large number of poisonous and harmful substances pose a great threat to the ecological environment and human. Therefore, it is a general trend to promote the development of renewable energy and green chemical engineering towards a greener environment. The conference focused on the latest research fields of environment, renewable energy and green chemical engineering, presenting scientific research results and its practical solutions to these matter. It has taken into account the principles of sustainable development, which provides an international platform for experts, professors, scholars and engineers from universities, scientific research institutes, enterprises and institutions at home and abroad to share their professional experiences, expand their professional networks and display their research results.

The comprehensive content of the conference has attracted great attention due to its wealthy information that may be useful to professionals working in the related fields. Many researchers in the related field had participated in the conference and made oral presentations. The conference proceedings contain 50 papers divided into 3 sections: Environment, Renewable Energy and Green Chemical Engineering.

The keynote speeches on April 23, 2022, were given by three scholars, Zhanying Yang, Shahid Hussain and Peigao Duan, and an invited lecture by Chunming Yang. In addition to the presentations brought by the authors, there were three parallel sessions. Session I: Ecosystem sustainability was hosted Haoming Chen (Nanjing University of Science and Technology, China) and Yuanming Guo (Nanjing University of Science and Technology, China), Session II : Remediation of water and soil pollution was hosted by Da Tian (Anhui Agricultural University, China) and Gongwen Luo (Key Laboratory of Soil Environment and Pollution Remediation, Institute of Soil Science, Chinese Academy of Sciences,China), and Session III : Landscape ecological planning and development was hosted by Haoming Chen (Nanjing University of Science and Technology, China) and Yang Feng (Xijing University, China). Whether in the main session or in the parallel sessions, all scholars expressed their views to showcase their research, contributing to drive innovation and breakthroughs in the whole field.

Many thanks to all the authors who had submitted papers for their participation. It is they who have put a lot of effort and creativity to make this work complete. And we feel honored that they are willing to present their excellent work on this conference. Many thanks also to all the editors and reviewers who had contributed a lot of time in their busy schedules to carefully read and evaluate all the manuscripts.

Finally, due to the epidemic prevention policy, it's a pity that we could not have offline communication and discussion, but still we would like to thank all the supporting organizations for their hardwork and the organizing committee for the extensive preparation that made this online conference a great success. We look forward to having a live conference next year to share the results.

Guest Editors

Chunming Yang (Hunan Normal University)

Haoming Chen (Nanjing University of Science and Technology)

Peigao Duan (Xi'an Jiaotong University)

Feipeng Jiao (Central South University)

Chang Wen (Huazhong University of Science and Technology)

录制中

# BEST PAPERS

Number: A801

Title: Biochar amendment in the green roof substrate  
improve air quality

Authors: Yishu Hu and Haoming Chen





录制中

# Lastest Issue

### 绿色发展·城市经济

- 长江经济带城市土地经济密度空间格局演变及驱动因素**  
**The Evolution and Driving Factors of the Spatial Density in the Yangtze River Economic Belt**  
 作者: 周国华, 曹明俊, 彭梓碧, 陈奕球  
 2022年第1期 v.45-No.1(01) 32-41页 (查看摘要) (在线阅读) (下载次数: 355) (引用次数: 31) (评论次数: 0) (同行评议: 0)
- 城市生态弹性与经济弹性耦合研究——以济南市为例**  
**Coupling Analysis of Urban Eco-elasticity and Economic Resilience: of Ji'nan City**  
 作者: 王成刚, 于海博, 侯士涛, 李福雷  
 2022年第1期 v.45-No.1(01) 42-48页 (查看摘要) (在线阅读) (下载次数: 317) (引用次数: 27) (评论次数: 0) (同行评议: 0)

### 资源·生态系统

- 基于CiteSpace的城市绿色空间研究分析与展望**  
**Analysis and Prospect of Urban Green Space Research Based on CiteSpace**  
 作者: 靳希有  
 2022年第1期 v.45-No.1(01) 14-19页 (查看摘要) (在线阅读) (下载次数: 477) (引用次数: 20) (评论次数: 0) (同行评议: 0)
- 1998—2019年青岛市植被覆盖度规律及对气候变化的响应**  
**Vegetation Coverage Variation from 1998 to 2019 in Qingdao and its Response to Climate Change**  
 作者: 汪海霞, 李万喜, 张同军  
 2022年第1期 v.45-No.1(01) 101-109页 (查看摘要) (在线阅读) (下载次数: 570) (引用次数: 20) (评论次数: 0) (同行评议: 0)
- 基于最小累积阻力模型的平江生态安全格局构建**  
**Construction of Ecological Security Patterns in Pingjiang County Based on the Model of Minimum Cumulative Coefficient**  
 作者: 陈立伟, 周江, 张恩, 孙恩成, 刘鹏, 左亚力, 李敬敏, 陈丹华, 丁奇奇  
 2022年第1期 v.45-No.1(01) 117-119页 (查看摘要) (在线阅读) (下载次数: 422) (引用次数: 23) (评论次数: 0) (同行评议: 0)
- 火险和氮添加对热带—副热带气候过渡区主要灌木光合特性的影响**  
**Effects of Burning and Nitrogen Addition on Photosynthetic Characteristics of Major Shrubs in North Subtropical-Warm Temperate Climate Transition Zone**  
 作者: 陈斌, 钟华, 杜强, 王允玉

### 绿色发展·乡村人居环境设计

- 乡村振兴背景下传统村落人居环境转型发展研究**  
**Research on the Transformation and Development of Traditional Villages' Human Settlement under the Perspective of Rural Revitalization**  
 作者: 王红霞, 王宇, 张铭华  
 2022年第1期 v.45-No.1(01) 150-157页 (查看摘要) (在线阅读) (下载次数: 397) (引用次数: 36) (评论次数: 0) (同行评议: 0)
- 欠发达地区县域乡村社会-生态系统韧性研究——以山西省静乐县为例**  
**Study on the Resilience of Rural Society-ecosystem at County Level in Underdeveloped Areas: A Case of Jingle County, Shanxi Province**  
 作者: 李红霞, 王红霞, 齐伟峰, 胡勇  
 2022年第1期 v.45-No.1(01) 171-177页 (查看摘要) (在线阅读) (下载次数: 649) (引用次数: 41) (评论次数: 0) (同行评议: 0)
- 乡村人居环境质量评价及其分区治理对策研究——基于甘肃省金昌市村庄调查数据**  
**Research on the Evaluation of Rural Human Settlement Quality and District Governance Countermeasures: Based on the Cross-sectional Data of Village Survey in Jinchang City, Gansu Province**  
 作者: 李红霞, 王红霞, 万芳, 李亚敏  
 2022年第1期 v.45-No.1(01) 228-235页 (查看摘要) (在线阅读) (下载次数: 416) (引用次数: 23) (评论次数: 0) (同行评议: 0)

### 环境治理

- 农田土壤镉污染现状与治理方法进展**  
**Recent Advances of the Current Situation and Remediation Methods of Cadmium Contamination in Paddy Soil**  
 作者: 黄卫, 任志远, 孙敏, 王志刚, 张峰, 周海  
 2022年第1期 v.45-No.1(01) 49-56页 (查看摘要) (在线阅读) (下载次数: 333) (引用次数: 17) (评论次数: 0) (同行评议: 0)
- 柚皮生物炭的理化性质及其对镉的吸附效应**  
**Physico-chemical Properties of Pomelo Peel Biochar and Its Adsorption Effect Towards Cadmium**  
 作者: 廖国成, 谭开强, 曹雪莹, 肖一芳, 刘路路, 程宇华, 曹新亮  
 2022年第1期 v.45-No.1(01) 57-66页 (查看摘要) (在线阅读) (下载次数: 316) (引用次数: 23) (评论次数: 0) (同行评议: 0)
- 大兴安岭森林伴生介质中多溴联苯醚的分布特征及风险评估**  
**Distribution Characteristics and Risk Assessment of Polybrominated Diphenyl Ethers in Environmental Media in the Southern Foothills of Daxing'anling Mountains**  
 作者: 李宇, 李任强, 韩宇飞, 李国立, 李柏成  
 2022年第1期 v.45-No.1(01) 67-75页 (查看摘要) (在线阅读) (下载次数: 368) (下载次数: 162) (引用次数: 18) (评论次数: 0) (同行评议: 0)
- 基于PMF模型的重金属元素源解析及环境风险评估**  
**Quantitative Analysis of Environmental Risk of Heavy Metal Sources in Soil Based on PMF Model**  
 作者: 张涛, 肖宇, 张永强, 梅少, 王翠玲, 刘国飞, 曹明俊  
 2022年第1期 v.45-No.1(01) 76-86页 (查看摘要) (在线阅读) (下载次数: 679) (下载次数: 476) (引用次数: 20) (评论次数: 0) (同行评议: 0)



聊天

11:24

小助手

Thank you for sharing. Is there anyone who might want to ask a few questions to our speaker?

小助手

ok, our[表情]next[表情]speaker[表情]would be our general chair —— Prof. Chunming Yang ,he is the editor in chief of 【Journal of Natural Science of Hunan Normal University】

【Journal of Natural Science of Hunan Normal University】 has made great contributions to the successful convening of this EREGCE conference.Let' s welcome Prof. Chunming Yang to introduce the 【Journal of Natural Science of Hunan Normal University】

发送至: 所有人



看谁人消息

发送(S)

Chunming YANG的屏幕共享

录制中  
International Conference on Environment, Renovation and Green Chemical Engineering  
EREGCE主持人

Zhanying Zhang

陈颢明njust

A203+RUIMAO

Shuaijuan Bian

张清凌

A210-Sichun Ding

Junqi Wang

A808JinxingCai

Chunming YANG

A179 Qian Deng

Shahid Hussain

A214-Lipeng WANG

A209 Hao Chen

A189-Kai-Chen

Baishan Li

蒋好

HaoyuTang

安农田达

A187-Yangwei Wu

A221-Yang Feng

A196/A202-张德龙

A804Fangfang Min

A188+Yuhao Liu

合肥学院-陈俊

录制中

International Com  
Environment, Rem  
Green Chemical En

eregce

eregce主持人

A111 + Jian Yang

A113 - Hao Wu

A112 - XIAOKUN

JunqiWang

A187 + Yangwei Wu

A203 + RUIMAO

A192 + Leiqiong CAI

A218 Zijian Zhou

JinshuoYan

A209 Hao Chen

陈锴

A179 Qian Deng

Haoyu Tang

Shuaijuan Bian

张清凌

说点什么...

张德龙

A226 Yue Zhou

小助手

ESBK国际学术交流中心

C

录制中

## Acknowledgements

- EREGCE 2022 - conference organisers, committee and staff
- Funding



Australian Government  
Department of Agriculture  
and Water Resources



Australian Government  
Australian Research Council



Queensland  
Government



- Colleagues in China
- QUT colleagues



录制中

International Conference on Environment, Renewable Energy  
and Green Chemical Engineering (EREGCE 2022)




**Nanomaterials Derived from Metal Organic  
Frameworks for Gas Sensing Applications**

**Prof. Dr. Shahid Hussain**  
[shahid@ujs.edu.cn](mailto:shahid@ujs.edu.cn)

**School of Materials Science and Engineering**




**Jiangsu University**



聊天

... ×

管理成员(63)

☰

batteries. He has published high quality research articles, and also has a wealth of experience, which laid a solid foundation for the project related research. Dr Shahid Hussain has excellent working experience on gas sensors and has been working on sensor device fabrication since 2011. He has published more than 215+ SCI indexed journal research articles with H-Index is 34 in Google Scholar with 3850 citations (Till date Feb 2022). He is also working as an Editor for 16 SCI indexed journals (Elsevier, Springer, Frontiers, Hindawi, American Scientific Publishers and MDPI).

小助手

Prof. Shahid Hussain today' s topic is  
Nanomaterials Derived from Metal Organic  
Frameworks for Gas Sensing Applications

发送至: 所有人 ▾

📁 📄 👤 ▾

请输入消息

发送(S) ▾

Shahid Hussain的屏幕共享

录制中

锁定画面

# Keynote Speaker



## Assoc. Prof Zhanying Zhang

Assoc. Prof Zhanying Zhang is the leader of Bioprocessing and Biorefining Group at the Centre for Agriculture and the Bioeconomy (CAB), Queensland University of Technology (Brisbane, Australia). He is also an Advance Queensland Industry Research Fellow. Assoc. Prof. Zhanying Zhang graduated from the University of Adelaide in 2008. He joined the CAB, QUT after he completed his PhD study. He has been working on lignocellulose pretreatment and biorefining, cellulosic biofuels and biochemicals, biomass-based materials since 2008. He developed several solvent-based innovative processes for pretreatment and fractionation of lignocellulosic biomass, which led to a number of patent applications and journal publications. His research is important to solve the real world challenges in energy, waste management and climate change. Assoc. Prof. Zhang has generated 102 publications, including 87 journal articles, 10 conferences papers and 5 book chapters. In addition, Assoc. Prof. Zhang has been granted 11 patents worldwide in the area of biomass pretreatment and biorefineries.

International Conference  
Environment, Reliability  
Green Chemical Engineering

REGCE主持人

合肥学院-纵诚

王KM

Zhanying Zhang

小助手

结束会议





# 1. Background

## Fossil Fuel

**Energy Crisis**

High Oil Price  
Energy Security Risk



**Climate Change**

Global Warming  
Hazy Weather  
Sea Level Rise





西安交通大学  
XI'AN JIAOTONG UNIVERSITY

EREGCE2022

Table 3 Elemental analysis (wt.%) of upgraded oil obtained at different reaction time and hydrogen replacement times

C/wt.%	H/wt.%	O/wt.%	S(PPM)	N(PPM)	HHV(MJ/kg)
Reaction time(h) (8MPaH <sub>2</sub> ,10wt.%Pt/C, replacement of H <sub>2</sub> at every 2h)					
4	88.78	9.99	0.82	37	5109
6	88.82	9.48	1.27	31	4976
8	89.62	9.83	0.93	32	5481
Number of H <sub>2</sub> replacement times (400°C, 8MPaH <sub>2</sub> , 10wt.% Pt/C, total of 6h)					
1	87.81	10.11	1.17	53	6867
2	88.82	9.48	1.27	31	4976
3	88.15	10.51	1.14	31	4220
4	88.58	9.77	0.87	26	3220
5	88.25	10.05	1.27	27	4168

As the reaction time increases, the denitrogenation and desulfurization increases first and then decreases.

In the same reaction time, the increase in the hydrogen replacement is beneficial to denitrogenation and desulfurization.



Rubia



Xiao Jin Yang



150\*\*\*\*4488



Chang Wen



ESBK主持人



合肥学院-宋子慧



合肥学院-杨小红



胡值斌



诗远小方



汤

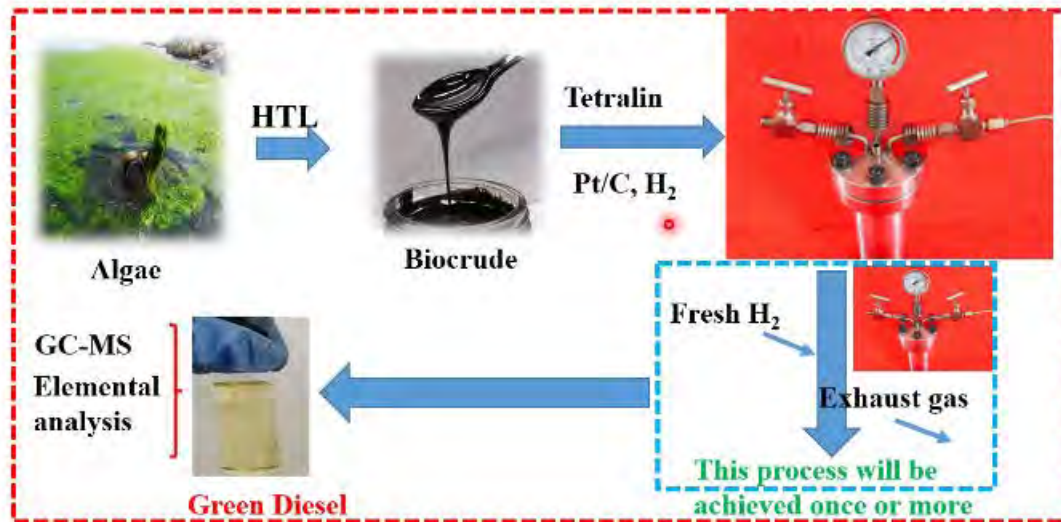




西安交通大学  
XI'AN JIAOTONG UNIVERSITY

EREGCE2022

## Overall Experiment Procedure



DJANDJA



# 1. Background

## Fossil Fuel

**Energy Crisis**

High Oil Price  
Energy Security Risk



**Climate Change**

Global Warming  
Hazy Weather  
Sea Level Rise

