



New Material and Chemical Industry

Selected peer-reviewed extended articles
based on abstracts presented at the
6th International Conference on
New Material and Chemical Industry
(NMCI 2021, online, November 13-14, 2021, China)

NMCI2021

Edited by
Prof. Shixuan Xin
Prof. Manuel F. M. Costa

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Preface

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Editor, Proceedings of the Sixth International Conference on New Material and Chemical Industry

¹Professor, Petro China Company Limited, China

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The Sixth International Conference on New Material and Chemical Industry (NMCI2021) was scheduled to be held in Sanya, China. Due to the COVID-19 pandemic, the meeting had to be changed from onsite to online during November 13-14, 2021 for academic exchanges & discussions. Three sessions were included: keynote speeches, oral presentations and poster presentations, covering a wide range of materials science and chemical industry, details about the presentations can be found in the Conference Overview part.

This conference proceeding included 14 accepted articles selected from 53 submissions, all the papers have been through rigorous review and process to meet the requirements of International publication standard.

We would like to express our gratitude to the reviewers of these manuscripts, who provided constructive criticism and stimulated comments and suggestions to the authors. We are extremely grateful as organizers, technical program committee and editors and extend our most sincere thanks to all the authors for their excellent contribution and work. Our sincere gratitude also goes to the Trans Tech Publications Ltd editors and managers for their helpful cooperation during the preparation of the proceeding.

On behalf of the Organizing Committees of NMCI2021

Conference Overview

NMCI2021 was scheduled to be held in Sanya, China this year. As the COVID-19 pandemic continues to create so much uncertainty, we made the decision to change the conference into a virtual event. The online conference was divided into 3 sessions: Keynote Speeches, Oral Presentations and Poster Presentations, attracted experts and scholars from China, UK, South Africa, Kazakhstan and Japan, attending the conference.

We would like to express our sincere gratitude to the distinguished keynote speakers, oral speakers, poster presenters as well as all the audiences. In addition, we'd like to give special thanks to **Prof. Shixuan Xin** from Petro China Company Limited, China presided over the conference.



Conference Schedule

Date	Program	Online Platform
November 13	Online Registration	VooV Meeting (腾讯会议) ID: 985 1403 9065
November 14	Opening Ceremony	
	Keynote Speech	
	Oral Presentation	
	Poster Presentation	

Keynote Speeches

It was our great honor to have the following impressive keynote speeches during the conference.



Speech Title: Conducting Polymers/Carbon Nanotubes Thermoelectric Composites
Prof. Cun-Yue Guo from University of Chinese Academy of Sciences, China



Data-led Structure Analysis and Development of Multicomponents Complex Material Systems

James Ren¹ and Li Wang²

Jing Guo¹, Olena Kostenevych³, Tammam Kaid¹, Cong Tang¹, Vince F Zevallos Herencia¹, Xiaoliang Qing¹, Xiaohu Guo⁴, Qingxiang Yang⁵,

¹Liverpool John Moores University, ²Bolton University/Queen Mary University of London, ³E.O. Paton Electric Welding Institute of the National Academy of Sciences of Ukraine ⁴Daresbury Laboratory, ⁵Yanshan University, ⁵Yanshan University

The Sixth International Conference on New Material and Chemical Industry(NMCI 2021)
November 13-15, 2021 Sanya China

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Speech Title: Data-led structure analysis and development of multicomponents complex material systems

Prof. James Ren from Liverpool John Moores University, UK



Nano-precision: The Gate Keeper for the Next Generation Thin Film Technology
Prof. Tien-Chien Jen from University of Johannesburg, South Africa

Oral Presentations

Following the keynote speakers, 4 scholars made oral presentations respectively. Speakers and their speeches are shown as below.

Speech Title	Speaker	Affiliation
Few-layer metamaterials for a spontaneous emission enhancement	Ling Li	Shenzhen University
High Sulfate-Bearing Kaolin Clay Stabilization with Waste Glass Powder before and after Mellowing Process	Aizhan Kissambinova	Nazarbayev University
Oxidizing pyrolysis of Huadian oil shale and its product distribution	Shaotao Xu	Jilin University
Evolution of the organic components and porous structure of Nong'an oil shale lump via Sub-critical Water Extraction	Jingjing Gu	Jilin University

Poster Presentations

Seven poster presentations came after oral presentations. Below is a brief list of presenters and their poster titles.

Presentation Title	Presenter	Affiliation
Hydroxy-Functionalized PAMAM Dendrimer as a CO ₂ -Selective Molecular Gate for CO ₂ Membrane Separation	Shuhong Duan	Research Institute of Innovative Technology for the Earth (RITE), Japan
Reversible Photo-responsive Gel-sol Transitions of Robust Organogels Based on an Azobenzene-containing Main-chain Liquid Crystalline Polymer	Jing Wang	Huazhong University of Science and Technology, China

Effect of Linear Crack Size and Location Relationship to Piston Stress and Damage Tolerance	Jinjun Tang	NingboTech University, China
Oxygen electrochemical production from air by high performance anion exchange membrane electrode assemble devices	Boyuan Tian	Global Energy Interconnection Research Institute Co., Ltd., China
Improving the conductivity and oxygen evolution performance of Iridium-Strontium Titanate electrocatalyst by Niobium doping	Jiayao Deng	Global Energy Interconnection Research Institute Co., Ltd., China
Classification investigation for the data of time-dependent springback of various metals	Shuai Sun	North China University of Technology, China
Analysis of the metallic intermediate band in Cr-doped AgGaS ₂ semiconductor for the photovoltaic application	Wenhao Peng	Shanghai Dianji University, China

This conference has made a big success because of the support and assistance from all attendees. We are expecting more and more experts and scholars from around the world to join us next year!