ICCCSC 4th 2024

4th International Conference on Calcined Clays for Sustainable Concrete

第四届煅烧粘土基可持续混凝土国际会议

Conference Program

Organizer:
The Chinese Ceramic Society

Executive Organizers:
Southeast University
Sinoma International Engineering Co., Ltd.
University of Jinan
Sobute New Materials Co., Ltd.
The Cement Branch of Chinese Ceramic Society

Co-organizers:
State Key Laboratory of High Performance Civil Engineering Materials
Jiangsu Key Laboratory of Construction Materials
Jiangsu Collaborative Innovation Center of Advanced Construction Materials
Jiangsu Civil Engineering & Architectural Society

Sponsoring Organizers:
Chinese Regional RILEM Group (CHN-RILEM)
American Concrete Institute China Chapter
International Green Building Alliance
Nanjing Institution of Engineers
CBMI Construction Co., Ltd.

Contents

Organizations

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American Concrete Institute China Chapter

International Green Building Alliance

Nanjing Institution of Engineers

CBMI Construction Co., Ltd.

Honorary Chairs

Prof. Changwen Miao,
Academician of the Chinese Academy of Engineering, Southeast University

Prof. Karen Scrivener,
Fellow of the Royal Academy of Engineering (FREng), EPFL

Conference Chairs

Ruiping Gao,
The Chinese Ceramic Society

Jiaping Liu,
Southeast University

Tongbo Sui,
Sinoma International Engineering Co., Ltd.

Senior Advisers

Duncan Herfort, Aalborg Portland A/S, Denmark
Feng Xing, Jinan University, China
Fernando Martirena, Central University of Las Villas, Cuba
Hui Li, Harbin Institute of Technology, China
Karen Scrivener, EPFL, Switzerland
Peiyu Yan, Tsinghua University, China
Ravindra Gettu, Indian Institute of Technology Madras, India
Shuguang Hu, Wuhan University of Technology, China
Xin Cheng, University of Jinan, China
Yan Yao, China Building Materials Academy Co., Ltd., China
Yongmo Xu, Huaxin Cement Co., Ltd./CCPA, China
Zongjin Li, Macao University of Science and Technology, China

Scientific Committee

Chairs

Karen Scrivener, EPFL, Switzerland
Tongbo Sui, Sinoma International Engineering Co., Ltd., China
Fernando Martirena, Central University of Las Villas, Cuba
Shashank Bishnoi, Indian Institute of Technology Delhi, India

Members

Caijun Shi, Hunan University, China
Chunxiang Qian, Southeast University, China
Cheng Yu, Sobute New Materials Co., Ltd., China
Christopher Leung, Hong Kong University of Science and Technology, China
Duncan Herfort, Aalborg Portland A/S, Denmark
Fazhou Wang, Wuhan University of Technology, China
Feng Xing, Jinan University, China
Fernando Martirena, Central University of Las Villas, Cuba
Franco Zunino, ETH Zurich, Switzerland
Geert De Schutter, Ghent University, Belgium
Guillaume Habert, ETH Zurich, Switzerland
Guoqing Geng, National University of Singapore, China
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Hongzhi Cui, Shenzhen University, China
Hui Li, Harbin Institute of Technology, China
Hui Li, Xi'an University of Architecture and Technology, China
Jianguo Han, Tsinghua University, China
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Qingge Feng, Guangxi University, China
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Rongxin Guo, Kunming University of Science and Technology, China
Shuguang Hu, Wuhan University of Technology, China
Suping Cui, Beijing University of Technology, China
Thomas Matschei, RWTH Aachen University, Germany
Torben Gadt, Technical University of Munich, Germany
Vanderley M. John, University of Sao Paulo, Brazil
Viktor Mechtcherine, Dresden University of Technology, Germany
Wei Zheng, Gammon Construction Limited, Hong Kong, China
Wenhui Duan, Monash University, Australia
Wensheng Zhang, China Building Materials Academy, China
Xiaodong Shen, Nanjing Tech University, China
Xin Cheng, University of Jinan, China
Yan Yao, China Building Materials Academy Co., Ltd., China
Yongmo Xu, Huaxin Cement Co., Ltd./CCPA, China
Yun Bai, University College London, United Kingdom
Zhenyu Huang, Shenzhen University, China
Zhonghe Shui, Wuhan University of Technology, China
Zongjin Li, Macao University of Science and Technology, China

Pre-conference Doctoral Courses

Basic Information

The doctoral course will introduce the hydration mechanisms of Portland cement and Limestone Calcined Clay Cement (LC^3), the preparation process of LC^3, performance optimization, environmental impact assessment, and case studies of its application in various engineering projects, to help participants establish a fundamental understanding of the future green development of cement-based materials.

Time

09:00~16:30, May 15, 2024

Venue

Teaching building 1 (J1-311), Southeast University, Jiulonghu Campus

15 May, 2024		Session Name	Presenter
AM	09:00 ~ 09:45	Context and introduction	Prof. Karen Scrivener, EPFL
	10:00 ~ 10:45	Hydrates	Prof. Karen Scrivener, EPFL
	10:45 ~ 11:15	**Break**	
	11:15 ~ 12:00	Hydration Mechanisms	Prof. Karen Scrivener, EPFL
	12:00 ~ 13:00	**Lunch (Meal tickets provided)**	
PM	13:00 ~ 13:45	LC^3 Hydration Mechanisms	Prof. Franco Zunino, ETH Zurich
	14:00 ~ 14:45	Clay Calcination	Prof. Fernando Martirena, UCLV
	15:00 ~ 15:45	LC^3 Concrete and Durability	Prof. Shashank Bishnoi, IIT Delhi
	16:00 ~ 16:30	**Q & A**	

Participation & Registration

Scan the Wechat QR code to join the course information group

NOTE: The registration deadline is May 12th, and the courses are free.

Classroom Location

Classroom

Teaching building 1 (J1-311), Southeas University, Jiulonghu Campus

Dining venue

Taoyuan Canteen

After entering from the North Gate, proceeding along East Liangjiang Road for about 750 meters, then turn right into Nangong Road.
Continue along Nangong Road for about 200 meters, then make a right turn. After the right turn, proceeding for about 20 meters, and the destination will be on your left.

Contact Information

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Main Topics

1. Influence of processing on reactivity of calcined clays
2. Influence of clay mineralogy on reactivity
3. LC^2 SCM: hydration, durability, and performance
4. Portland-calcined clay-limestone systems: hydration, durability, and performance
5. Calcined clay-alkali systems: hydration, durability, and performance
6. Calcined clay-new blends
7. Limestone cement
8. Life cycle analysis, economics and environmental impact of use of calcined clays in cement and concrete
9. Field applications
10. Rheology of calcined clay systems

Keynote Speakers

Changwen Miao
Southeast University
China

Changwen Miao, academician of the Chinese Academy of Engineering, professor of Southeast University. He serves as the director of the academic committee at Southeast University, chair of the Joint International Laboratory for Advanced Construction Materials (LACM). Engaged in both theoretical research and practical applications of civil engineering materials, he has achieved numerous breakthroughs in the durability improvement of construction materials, service life extension of major infrastructure projects and development of multifunctional civil engineering materials. He has been awarded with 3 second prize of the State Scientific and Technological Progress Awards, 1 second prize of the State Technology Invention Award. He has 82 national invention patents issued, and has published 4 monographs and over 200 research papers.

Karen Scrivener
EPFL
Switzerland

Karen Scrivener, fellow of the Royal Academy of Engineering (FREng) and the Swiss Academy of Engineering Sciences, and professor of Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. She obtained her Ph.D. degree at Imperial College London. Her research fields focus on the hydration mechanisms of cement-based materials and the microstructure characterization. Prof. Scrivener has published over 250 SCI papers accumulating a total citation count of over 27,000. She is now the head of Laboratory of Construction Materials at EPFL and had served as the editor-in-chief of the Cement and Concrete Research journal for 15 years. In 2008, she first introduced the concept of limestone-calcined clay cement (LC^3) and serves as the overall coordinator of the LC^3 project which is supported by the Swiss Agency for Development and Cooperation (SDC).

Jiaping Liu
Southeast University
China

Jiaping Liu, academician of the Chinese Academy of Engineering, professor of Southeast University. He has developed a theoretical framework for shrinkage cracking, innovated in the field of ultra-high-performance concrete technology, and established three key concrete technologies: shrinkage reduction and crack resistance, mechanical properties improvement, and regulation of rheological properties, which have been successfully applied in over 110 major engineering projects. Prof. Liu obtained 91 domestic patents and 14 international patents. He has published 258 SCI/EI papers and drafted or co-drafted 22 standards or regulations. He has been awarded 1 second prize of the State Technology Invention Award, 4 second prize of the State Scientific and Technological Progress Awards.

Feng Xing
Jinan University
China

Feng Xing, academician of the Chinese Academy of Engineering, president of Jinan University. He is the chairman of the National Concrete Standardization Technical Committee, vice chairman of American Concrete Institute (ACI) China Branch, and director of the key laboratory of Durability in Coastal Civil Engineering in Guangdong. Focusing on the safety, usability, and sustainability of concrete structures, he has obtained great research achievements in the field of green and recycling concrete materials, durability, and sustainability of concrete structures. He has obtained more than 150 patents for invention and published over 470 SCI papers. He has won 2 second prize of the State Technology Invention Awards, 3 first prize of the provincial and ministerial level Technology Invention Awards.

Hui Li
Harbin Institute of Technology
China

Hui Li, academician of the Chinese Academy of Sciences, professor of Harbin Institute of Technology. She has long been engaged in research on bridge safety monitoring, proposing the academic concept of integrating the mechanical physical laws of bridges with big data machine learning and creating the theory of physical machine learning for bridge safety diagnosis. She has served as the Chairman of IASCM and is currently the Chairman of the Asia-Pacific Intelligent Structural Technology Research Network Center, Vice Chairman of the Chinese Society for Vibration Engineering. She has won 4 second prizes for National Science and Technology Progress, the George W. Housner Medal and the Robert H. Scanlan Medal from the American Society of Civil Engineers. She has published over 200 SCI papers in journals such as *Nature* and *Science*.

Caijun Shi
Hunan University
China

Caijun Shi, chief professor of Hunan University, academician of the Ukrainian Academy of Engineering Sciences and the Russian Academy of Engineering Sciences, chairman of the Asian Concrete Federation, and fellow of the International Energy Foundation (IEF), the American Concrete Institute (ACI) and the International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM).He is the founder and Editor-in-Chief of Journal of Sustainable Cement-based Materials, and also the editorial board member of Cement and Concrete Research. His research includes the design and preparation of green high-performance concrete, waste utilization and disposal, and intelligent impermeable materials. He has been granted 4 patents for invention in United States and 45 patents in China, and he has authored over 530 academic papers.

Fernando Martirena
Central University "Marta Abreu" of Las Villas
Cuba

Fernando Martirena, academician of the Cuban Academy of Sciences and Director of the Center for Structural and Material Research and Development at the Central University "Marta Abreu" of Las Villas, Cuba. He currently serves as Chief Advisor of the Swiss company Ecosolutions and Chair of RILEM Latin America. He has been engaged in research on sustainable construction, supplementary cementitious materials, solid waste, and bio-additives in the construction industry for many years. Since 2005, he has collaborated with Prof. Karen Scrivener of EPFL on the use of calcined clays as supplementary cementitious materials, leading to the development of the LC^3 concept. He currently serves as the LC^3 Regional Coordinator for Latin America. He has published over 150 SCI papers.

Nicolas Roussel, director of the laboratory CPDM at Gustave Eiffel University in France. He is currently the chairman of the International Union of Laboratories and Experts in Construction Materials, Systems and Structures (RILEM). He received his doctor degree in civil engineering from INSA Rennes in 2001. He has devoted his career to the study of rheology of cement-based materials and accumulated over 150 SCI papers with more than 10,000 citations. He is the honorary Editor-in-Chief of RILEM Technical Letters, the editorial board member of Cement and Concrete Research and Materials and Structures. He was awarded the RILEM Robert L'Hermite Medal in 2007. He was the chairman of RILEM Technical Advisory Committee and the RILEM Technical Committee on digital fabrication with cement-based materials.

Nicolas Roussel
Gustave Eiffel University
France

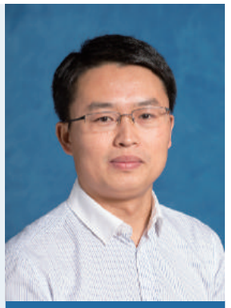
Shashank Bishnoi
IIT Delhi
India

Shashank Bishnoi, professor of the department of civil engineering at the Indian Institute of Technology Delhi. He completed his Ph.D. from EPFL, Switzerland in the area of modelling of cement hydration. He worked as a post-doctoral fellow at Laval University, Canada and has also been a Visiting Professor at EPFL, Switzerland and University of Tokyo, Japan. His areas of interest include cement hydration models, low-carbon cementitious materials, sustainable concrete, and the durability of concrete materials and structures. He has published over 80 SCI papers, with more than 2,500 citations. Additionally, he serves as an editorial board member for the Cement and Concrete Research. He is one of the global initiators of the LC^3 project, and he serves as the head of the LC^3 Asia-Pacific regional technical resource center.

Thomas Matschei
RWTH Aachen University
Germany

Thomas Matschei, professor, director of the Institute of Building Materials at RWTH Aachen University in Germany. He completed his doctoral studies at the University of Aberdeen. Between 2008 and 2017, he held the position of Technical Research and Development Manager at Lafarge-Holcim in Switzerland. From 2017 to 2020, he was a professor at Dresden University of Applied Sciences. He mainly studies cement hydration mechanisms and hydration thermodynamic simulation. He has published more than 40 SCI papers and received over 4,000 citations. He has been a keynote speaker at three consecutive International Cement Chemistry Conference. Presently, he holds the position of leader for Core Projects (CP5, 6, 7, mainly about LC^3) within the Innovandi - the Global Cement and Concrete Research Network.

Yun Bai, chair professor in the department of Civil, Environmental and Geomatics Engineering at University College London (UCL), director of the Advanced and Innovative Materials Center (AIM), fellow of the UK Higher Education Academy (FHEA), the Institute of Concrete Technology (FICT), and the Institute of Materials, Minerals and Mining (FIMMM). He is head of the Geotechnical and Materials Section and deputy head of Civil Engineering. His main research interests are novel low-carbon cementitious materials, advanced composite materials, rheological properties of cement and concrete, durability of concrete structures, structural health monitoring, and solidification of nuclear waste. He has led and participated in more than 20 research projects. He has organized and participated in nearly 60 international academic conferences and published more than 170 academic papers.



Yun Bai
University College London
United Kingdom

Ruben Snellings
KU Leuven
Belgium

Ruben Snellings is an associate professor of Earth and Environmental Sciences at the KU Leuven, Belgium. He received his Master's and Doctoral degrees in Earth and Environmental Sciences from KU Leuven in 2006 and 2011, respectively. He has served as a Senior Scientist in Flemish Institute for Technological Research (VITO), Belgium. His research areas include applied mineralogy, low-carbon cement, mineral admixtures, etc., and he has published over 100 SCI papers, with more than 5,000 citations. He currently serves as the Chairman of the RILEM Technical Committee on Accelerated Mineral Carbonation in Building Materials Production Processes (TC309- MCP) and the Technical Committee on Testing Reactivity of Mineral Admixtures (TC267-TRM). He has been the keynote speaker at two consecutive International Cement Chemistry Conference.

Conference Overview

Date	Time	ICCCSC2024	Pre-Conference Doctoral Courses
Wednesday May 15, 2024	09:00-12:00	Registration	Introduction & Hydrates & Hydration Mechanisms
	12:00-13:00		Lunch (Taoyuan Canteen)
	13:00-13:45		LC^3 Hydration Mechanisms
	14:00-14:45		Clay Calcination
	15:00-15:45		LC^3 Concrete and Durability
	16:00-16:30		Q & A
	16:30-20:00		/
	18:00-20:00	Buffet Dinner (All-day Dining Restaurant, 1st floor)	
Thursday May 16, 2024	08:30-08:50	Opening Ceremony (Grand Ballroom, 3rd floor)	
	08:50-09:50	Plenary Session 1 (Grand Ballroom, 3rd floor)	
	09:50-10:20	Photo & Coffee Break	
	10:20-12:20	Plenary Session 2 (Grand Ballroom, 3rd floor)	
	12:30-13:30	Lunch (All-day Dining Restaurant, 1st floor)	
	13:30-15:14	Parallel Session A1 (Grand Ballroom A, 3rd floor) / Parallel Session B1 (Grand Ballroom B, 3rd floor) / Parallel Session C1 (Upark Room, 5th floor)	
	15:14-15:40	Coffee Break	
	15:40-17:24	Parallel Session A2 (Grand Ballroom A, 3rd floor) / Parallel Session B2 (Grand Ballroom B, 3rd floor) / Parallel Session C2 (Upark Room, 5th floor)	
	18:30-20:30	Conference Banquet (Grand Ballroom, 3rd floor)	
Friday May 17, 2024	08:30-10:14	Parallel Session A3 (Grand Ballroom A, 3rd floor) / Parallel Session B3 (Grand Ballroom B, 3rd floor) / Parallel Session C3 (Upark Room, 5th floor)	
	10:14-10:40	Coffee Break	
	10:40-12:24	Parallel Session A4 (Grand Ballroom A, 3rd floor) / Parallel Session B4 (Grand Ballroom B, 3rd floor) / Parallel Session C4 (Upark Room, 5th floor)	
	12:30-13:00	Buffet Lunch (All-day Dining Restaurant, 1st floor)	
	13:30-15:00	Plenary Session 3 (Grand Ballroom, 3rd floor)	
	15:00-15:30	Coffee Break	
	15:30-17:00	Plenary Session 4 (Grand Ballroom, 3rd floor)	
	17:00-17:30	Closing Ceremony (Grand Ballroom, 3rd floor)	
	18:00-20:00	Buffet Dinner (All-day Dining Restaurant, 1st floor)	
Saturday May 18, 2024	08:30-14:00	Technical Visiting (Zhenjiang Sobute New Material Co., Ltd.)	

Conference Program

Thursday, May 16, 2024

08:30-08:50	**Opening Ceremony** **Chair: Jiaping Liu**	
08:30-08:35	**Ruiping Gao** The Chinese Ceramic Society	Grand Ballroom (3rd floor)
08:35-08:40	**Changwen Miao** Southeast University	
08:40-08:45	**Wenqi Zhong** Vice-President of Southeast University	
08:45-08:50	**Tongbo Sui** Sinoma International Engineering Co., Ltd.	
08:50-09:50	**Plenary Session 1** **Chair: Caijun Shi**	
08:50-09:20	**Changwen Miao** Several issues in the development of cement concrete technology	Grand Ballroom (3rd floor)
09:20-09:50	**Karen Scrivener** Recent progress of limestone calcined clay cement (LC^3)	
09:50-10:20	**Photo & Coffee Break**	
10:20-12:20	**Plenary Session 2** **Chair: Wenhui Duan**	
10:20-10:50	**Jiaping Liu** Development and application of calcined kaolin tailings and limestone low carbon cementing materials in China	Grand Ballroom (3rd floor)
10:50-11:20	**Hui Li** Super performance of cement-based material through super high pressure-induced crystallization	
11:20-11:50	**Thomas Matschei** A fresh look on the early age properties of calcined clay limestone cements	
11:50-12:20	**Yun Bai** Using waste-derived calcined clay as an alternative supplementary cementitious material - a UK experience	

13:30-15:14	Parallel session A1: Calcined clay systems: hydration, durability, and performance Chair: Tung-Chai Ling	
13:30-13:50	**Yu Chen (Invited speech)** 3D Printable LC^3: Good, Bad, Possibilities and Challenges	Grand Ballroom A (3rd floor)
13:50-14:02	**Julián David Carmona** Interfacial transition zone in blended cement concretes: the limestone calcined clay cement case	
14:02-14:14	**Peiliang Shen** Development of carbonated RCF calcined clay cements	
14:14-14:26	**Sebastien Dhers** Activation of low-kaolinitic clay LC^3 binders by C-S-H nucleation seeding	
14:26-14:38	**Kang Chen** Understanding the effect of seawater ions on chlorid transport and composition of hydration phase in limestone calcined clay cement (LC^3)	
14:38-14:50	**Sarra El Housseini** Durability of LC^3 binders incorporating Calcium Aluminates as strength boosters	
14:50-15:02	**Beatrice Malchiodi** Creep and shrinkage of limestone calcined clay cement (LC^3) concrete: experiments and comparison of models	
15:02-15:14	**Melanie Langlois** Characterization of clay as precursor material in calcined clay based geopolymer	
15:14-15:40	**Coffee Break**	

15:40-17:24	Parallel session A2: Calcined clay systems: hydration, durability, and performance Chair: Pan Feng	
15:40-16:00	**Claude Lorea (Invited speech)** Calcined clays in the context of GCCA net zero roadmap and accelerator framework - state of play and future outlook	Grand Ballroom A (3rd floor)
16:00-16:12	**Run Chong** Mechanical performance of fiber reinforced LC^3 at elevated temperature	
16:12-16:24	**Dehao Wang** Increasing the early strength of LC^3 cements	
16:24-16:36	**Jinfeng Sun** Hydration and phase assemblage of low-clinker limestone calcined clay cements	
16:36-16:48	**Federica Boscaro (Karen Scrivener)** Effect of accelerators on the hydration of Portland cement - clay systems	
16:48-17:00	**Shiyu Sui** Investigation on the chloride transport in calcined clay-calcium carbonate whisker blended cementitious materials	
17:00-17:12	**Jian Zhou** Ultra-low carbon cement: granulated blast furnace slag-calcium sulphoaluminate cement	
17:12-17:24	**Ziyu Chen** Ion-specific effects influencing the reactivity of metakaolin	

13:30-15:14	Parallel Session B1: Rheology of calcined clay systems Chair: Le Teng	
13:30-13:50	**Lei Lei (Invited speech)** Comprehensive overview of interactions between calcined clays and polycarboxylate superplasticizers	Grand Ballroom B (3rd floor)
13:50-14:02	**Martin Mosquet** Features explaining workability retention of calcined clay blended cements	
14:02-14:14	**Michelle Wong** Rheological performance of limestone calcined clay cement (LC^3) for 3D-Printing applications	
14:14-14:26	**Ashirbad Satapathy** Treatment of calcined clays to reduce the water demand	
14:26-14:38	**Christopher Hoffmann** Reactivity and rheological behaviour of LC^3 containing meta-illite and meta-bentonite	
14:38-14:50	**Rui Ma** Design and mechanical properties of low-carbon ultra-high performance concrete with limestone	
14:50-15:02	**Tao Xie** Enhancing the anti-permeability of limestone-Portland cement blends through thermodynamic modeling and the synergistic use of metakaolin	
15:02-15:14	**Yusra Iftikhar** Enhancing properties of aged portland cement with metakaolin: mechanisms and effects	
15:14-15:40	**Coffee Break**	

15:40-17:14	Parallel Session B2: Rheology of calcined clay systems Chair Chair: Lei Lei	
15:40-16:00	**Jørgen Skibsted (Invited speech)** Interactions between polycarboxylate (PCE) superplasticizers and calcined clays studied by multinuclear NMR spectroscopy	Grand Ballroom B (3rd floor)
16:00-16:12	**Johann Plank** Optimization of PCE superplasticizers for calcined clay blended cements used in the CALLISTE project in Denmark	
16:12-16:24	**Sebastien Dhers** Iron content in calcined clay and admixture performance in limestone calcined clay cements	
16:24-16:36	**Jiang Zhu** Underlying mechanisms of the effect of microfines of manufactured sand on rheological growth of cement-based materials	
16:36-16:48	**Jun Ren** Adsorption behaviour and interaction of polycarboxylate superplasticiser in cement - calcined clay blend pastes under different addition method	
16:48-17:00	**Anwesa Satapathy** Comparative study: Surface resistivity of Composite cement and LC^3 system	
17:00-17:12	**Dan Zhao** Study on the effect and mechanism of thermal activation on the physicochemical properties of red mud	
17:12-17:24	**Liheng Zhang** Investigation of the hydration and mechanical properties of metakaolin blended cement with the combined addition of aluminum sulfate and triethanolamine	

13:30-15:22	Parallel Session C1: Special session for NSFC Major Program (52293430) Chair: Zhiyong Liu	
13:30-13:50	**Yimiao Huang (Invited speech)** Performance of high-efficiency microwave curing system for limestone calcined clay cement	Upark Room (5th floor)
13:50-14:10	**Ran Ding (Invited speech)** Seismic performance prediction and cross-sectional optimization for UHPC-concrete composite frames	
14:10-14:22	**Wanhao Yu** Numerical simulation of hydration and microstructural develpoment of silicoaluminate cementitious materials	
14:22-14:34	**Jinhui Tang** Enhancement in toughness of silicoaluminate concrete by in-situ polymerization of acrylamide	
14:34-14:46	**Yuanhao Dong** Data-knowledge dual driven method for predicting concrete shrinkage and cracking	
14:46-14:58	**Wei Dong** Porousness modification of cementitious mortar with the involvement of ultrasonication	
14:58-15:10	**Zhu Pan** Effect of mixing sequence on rheological and mechanical properties of fiber-reinforced LC^3 mortars	
15:10-15:22	**Yang Wu** A multi-scale model from realistic microstructure to macroscopic concrete effective properties	
15:22-15:50	**Coffee Break**	

15:50-17:34	Parallel Session C2: Field applications Chair: Yang Zhou	
15:50-16:10	**Harald Justnes (Invited speech)** Performance of mortar with calcined clay after several years of moist storage	Upark Room (5th floor)
16:10-16:22	**Luis Armando Montilla Gaudin** One kiln for two uses	
16:22-16:34	**Rashmi Sharma** Challenges of locating kaolin clays in diverse geological settings	
16:34-16:46	**Avet François** Industrial production of calcined clay – Insights from the Vicat Group	
16:46-16:58	**Akash Mishra** Assessing local materials for limestone calcined clay cement (LC^3) in Fiji	
16:58-17:10	**Yukun Qin** Research on the mechanism of collaborative activation of calcined clay based on partial calcination technology	
17:10-17:22	**Mingqing Liu** Effects of nanoSiO_2 on the hydration and hardening properties of Limestone Calcined Clay Cement (LC^3) with different calcined kaolinite content	
17:22-17:34	**Xuyan Shen** The non-classical nucleation of C-S-H and its application on carbon capture	

Friday, May 17, 2024

08:30-10:14	Parallel Session A3: Calcined clay systems: hydration, durability, and performance Chair: Zhenhua Duan	
08:30-08:50	**Johann Plank (Invited speech)** On the behavior of individual meta clays from illite, smectite, kaolinite and muscovite in calcined clay blended cements and their interaction with PCE superplasticizers	Grand Ballroom A (3rd floor)
08:50-09:02	**Xiaohui Chen** Chloride diffusivity of alkali-activated slag/fly ash composites in multi-salt solution	
09:02-09:14	**Xuehong Ren** Occurrence state and forms of clay raw materials in China	
09:14-09:26	**Qiao Wang** Characterizing LC^3-50 cement mortars exposed to sodium sulfate solution for 8 years	
09:26-09:38	**Lupesh Dudi** Assessing the influence of calcined kaolinite content on the durability properties of limestone calcined clay cement (LC^3)	
09:38-09:50	**Yemin Dong** Unveiling the synergistic effect of in-situ generated calcium carbonate by CO_2 mixing on the reaction of calcined clay	
09:50-10:02	**Dajiang Zhang** Influence of metakaolin dosage on macroscopic property and hydration-carbonation process of natural hydraulic lime-based materials	
10:02-10:14	**Zhuqing Yu** Resistance of LC^3 coral mortar to chemical attack	
10:14-10:40	**Coffee Break**	

10:40-12:24	Parallel Session A4: Influence of clay mineralogy on reactivity Chair: Ru Mu	
10:40-11:00	**Qingge Feng (Invited speech)** Preparation of LC^3 cementitious material by synergistic Bayer red mud and electrolytic manganese residue	Grand Ballroom A (3rd floor)
11:00-11:12	**Beatrice Malchiodi** Durability,mechanical performance and life cycle analysis of optimized-low-carbon limestone calcined clay cement (LC^3) structural concrete	
11:12-11:24	**Pedro Ladeira** Optimizing plant configurations for energy-efficient calcined clay manufacturing	
11:24-11:36	**Nina Cardinal** Assessment of cements with UK re-purposed calcined clays	
11:36-11:48	**Mehnaz Dhar** The impact of iron in kaolinite clays on the calcination process	
11:48-12:00	**Wei Wang** Recyclable calcium carbonate-based concrete: Utilizing calcium carbonate to bond limestone powders	
12:00-12:12	**Yu Wu** Preparation and performance evaluation of calcined low-grade aluminosilicate minerals as SCMs	
12:12-12:24	**Can Lin** Calcined dredged sediments as a new source of novel supplementary cementitious material	

08:30-10:14	Parallel Session B3: Influence of processing on reactivity of calcined clays Chair: Franco Zunino	
08:30-08:50	**Guoqing Geng (Invited speech)** Sustainable concreting in Singapore with waste and low-grade material	Grand Ballroom B (3rd floor)
08:50-09:02	**Tafadzwa Ronald Muzenda** Performance of mechanically activated kaolinitic clays in calcined clay limestone cement	
09:02-09:14	**André Trümer** C/Clay material tests – semi-industrial trials for proper process design	
09:14-09:26	**Shuai Nie** Structure and pozzolanic reactivity of kaolinitic clay co-calcined with limestone or Na_2SO_4 studied by ^{23}Na, ^{27}Al, ^{29}Si NMR spectroscopy	
09:26-09:38	**Hao Sui** Thermodynamic characterization of hydration products and phase assemblages in cement with calcined clay under various calcination conditions	
09:38-09:50	**Yuchen Hu** What is the optimal temperature for calcined clays? - A case study of clays in Singapore	
09:50-10:02	**Yongqiang Li** Activation of locally excavated spoil for utilization in limestone calcined clay cement (LC^3)	
10:02-10:14	**Wilson R. Leal da Silva** Towards sustainable cement: exploring the potential of mechanically and thermally activated clay shales as an SCM	
10:14-10:40	**Coffee Break**	

10:40-12:24	Parallel Session B4: Influence of processing on reactivity of calcined clays Chair: Pengkun Hou	
10:40-11:00	**Chuanlin Hu (Invited speech)** Research on the mechanism of collaborative activation of calcined clay based on partial calcination technology	Grand Ballroom B (3rd floor)
11:00-11:12	**Tausif E Elai** Insights on clay calcination via in-situ TEM	
11:12-11:24	**Yang Ma** Effect of calcination temperature on the reactivity of coal gangue as a supplementary cementitious material	
11:24-11:36	**Amit Kumar** "Viscoelasticity of C-S-H"?	
11:36-11:48	**Bo Qu** Performance of calcined coal gangue blended with limestone in cement system	
11:48-12:00	**Zhiwei Wang** Research and industrial application of calcined clay	
12:00-12:12	**Zhiwei Liu** Effect of triethanolamine on the hydration and sulfate balance of calcined clay cement	
12:12-12:24	**Bruno Flangini Lauri** Electrification of clay calcination: a first look into dynamic modeling and energy management for integration with sustainable power grids	

08:30-10:14	Parallel Session C3: Calcined clay-new blends Chair: Jing Yu	
08:30-08:50	**Zhenyu Huang (Invited speech)** Chloride ingression and carbonation resistance of LC^3 based ultra-lightweight cement composites	Upark Room (5th floor)
08:50-09:02	**Yi Xiang** Effect of metakaolin on phase assemblage of magnesia alumina silicate cement	
09:02-09:14	**Amrita Hazarika** Monitoring of microstructure and strength of composite binder blended with activated heterogenous clay	
09:14-09:26	**Jianxin Lu** Valorisation of low-grade calcined clay in cement-based materials	
09:26-09:38	**Cheng Jiang** Impact of limestone substitution with alternative filler materials in LC^3 mortar composites	
09:38-09:50	**Liao Huang** Radiative cooling potential of cementitious composite with calcined clay cement	
09:50-10:02	**Rakhi Tyagi** Assessment of correlation between clay composition and lime reactivity of calcined clay: a quantitative approach	
10:02-10:14	**Roohangiz Shivaee Gariz** Process simulation and optimization of an electrically heated clay calcination process	
10:14-10:40	**Coffee Break**	

10:40-12:32	Parallel Session C4: Calcined clay-new blends Chair: Xuehong Ren	
10:40-11:00	**Franco Zunino (Invited speech)** Breaking through the concrete decarbonisation paradigm with fundamental cement science, concrete technology and calcined clays	Upark Room (5th floor)
11:00-11:20	**Chun Pei (Invited speech)** Exploring sustainable advancements in nanocarbon-modified cementitious materials for high performance and low carbon impact	
11:20-11:32	**Nishant Garg** Pushing towards >50% cement replacement via low-clinker LC^3 – insights on carbonation performance	
11:32-11:44	**Reena Sanjay Krishna** Performance evaluation of alternative low-grade waste calcined clay sources in limestone calcined clay cement (LC^3) mortars	
11:44-11:56	**Haitao Gu** Regulation of the structure of various pore size intervals of complex mortars with supplementary cementitious materials	
11:56-12:08	**Jitong Zhao** Accelerated curing of mineral impregnated carbon fiber reinforcements by reactive calcined clay and elevated temperatures	
12:08-12:20	**Simone Elisabeth Schulze** CO_2 and energy savings potential of ternary cements with calcined clay and blast furnace slag	
12:20-12:32	**Lei Xu** Preparation of limestone calcined clay cements (LC^3) using thermoactivated recycled concrete powder instead of cement	

13:30-15:00	**Plenary Session 3** Chair: Thomas Matschei	
13:30-14:00	**Feng Xing** LC^3 sustainable concrete: From material and structural performance to life cycle environmental assessment	Grand Ballroom 3rd floor
14:00-14:30	**Nicolas Roussel** Packing optimization of mineral binders, the underlying physics, the measurement protocols and the prediction models	
14:30-15:00	**Shashank Bishnoi** Testing the quality of calcined clays: Keeping it simple!	
15:00-15:30	**Coffee Break**	
15:30-17:00	**Plenary Session 4** Chair: Shashank Bishnoi	
15:30-16:00	**Caijun Shi** Quantifying the physical and chemical effects of lime-stone powder in cement-based materials	Grand Ballroom 3rd floor
16:00-16:30	**Fernando Martirena** Challenges in the industrial scaling up of the production of LC^3	
16:30-17:00	**Ruben Snellings** Waste or by-product clays as supplementary cementi-tious material resource	
17:00-17:30	**Closing Ceremony**	

General Information

Pre-conference Doctoral Courses

Date: Wednesday, May 15, 2024

Time: 09:00-16:30

Venue: Classroom-J1-311, Jiulonghu Campus, Southeast University

Conference Venue

Venue: Holiday Inn Nanjing Qinhuai South

Address: No.21 Mozhou East Road, Jiangning District, Nanjing, China

Conference Room

Plenary sessions: Grand Ballroom, 3rd floor

Parallel sessions: Grand Ballroom A/B (3rd floor), Upark Room (5th floor)

Registration

Date: Wednesday, May 15, 2024

Time: 13:00-20:00

Venue: Hotel Lobby (1st floor)

Photo

Date: Thursday, May 16, 2024

Time: 09:50-10:00

Venue: Photography Area (1st floor)

Buffet Lunch

Date: Thursday & Friday, May 16-17, 2024

Time: 12:30-13:30

Venue: All-day Dining Restaurant (1st floor)

Conference Banquet

Date: Thursday, May 16, 2024

Time: 18:30-20:30

Venue: Grand Ballroom (3rd floor)

Buffet Dinner

Date: Wednesday & Friday, May 15 & 17, 2024

Time: 18:00-20:00

Venue: All-day Dining Restaurant (1st floor)

Technical Visiting

Zhenjiang Sobute New Material Co., Ltd.

Date: Saturday, May 18, 2024

Time: 08:30-14:00

Technical visiting make reservation at the registration desk.

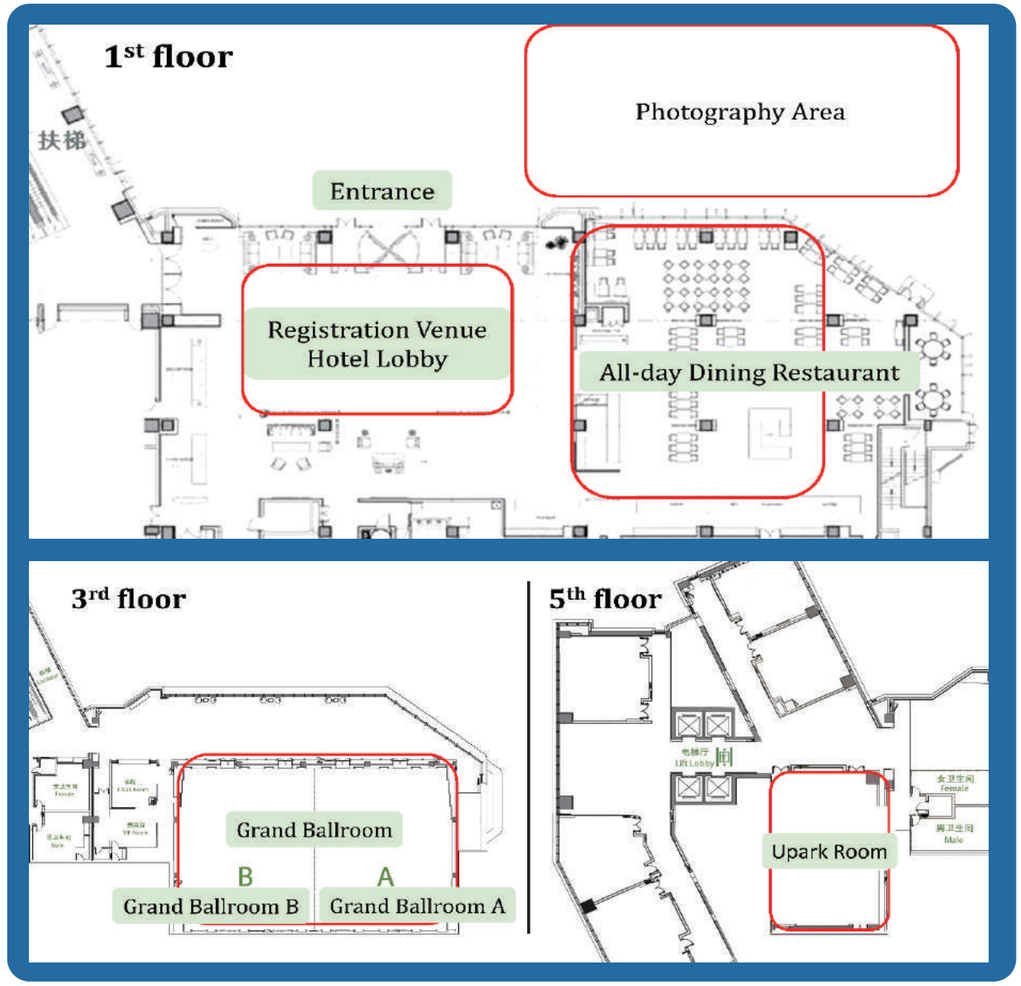
Hotel Information

Venue: Holiday Inn Nanjing Qinhuai South

Address: No.21 Mozhou East Road, Jiangning District, Nanjing, China

Sketch Map of Holiday Inn Nanjing Qinhuai South

The 4th International Conference on Calcined Clay for Sustainable Concrete (ICCCSC 2024) would be held in Holiday Inn Nanjing Qinhuai South (HINQC). HINQC is located in Jiangning District, Nanjing, with convenient transportation. It is directly accessible from Exit 2 of Muzhou East Road Station on Metro Line 3. Adjacent to Nanjing Sand Ship Outlets Art Commercial Plaza, it seamlessly connects to the Ring Expressway, Shuanglong Avenue, Airport Expressway, and other highways. The accommodation is also arranged at HINQC. Registration will be located on the first floor of the hotel, while the conference will take place on the third and fifth floors.



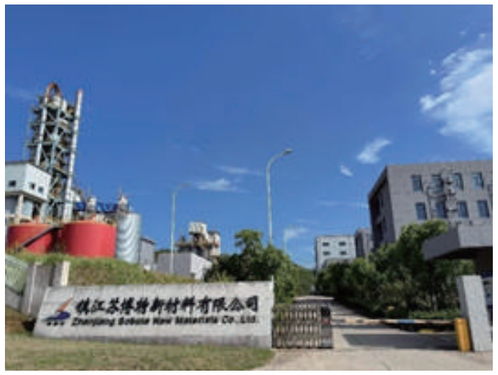
Technical Visting

Zhenjiang Sobute New Material Co., Ltd.

18 May, departure at 8:30 by bus from the conference venue

Zhenjiang Sobute New Materials, Co., Ltd, which is founded in 2014, covers an area of about 185 acres, with a total investment of about 230 million yuan. As a subsidiary of Jiangsu Subote New Materials Co., Ltd, it owns an industrialization base of high-performance civil engineering materials with an annual output of 370,000 tons. In 2022, it was approved as the honorary title of "Gazelle Enterprise" in Jiangsu Province.

The non-metallic mineral suspension calcination production line was completed in August 2018. The annual output is 100,000 tons per year for magnesium oxide expansive agents or 200,000 tons pre year for calcined clay. The construction and operation of the calcined clay production demonstration line prove that the high activity calcined clay product can be produced stably (600 tons per day), and the calcination heat consumption is 42% lower than that of the rotary kiln process.



If you want to attend conference tour, please make reservation at the registration desk on 15 May or send your personal information to **icccsc2024@sobute.com.**

Organizing Committee

Chairs

Zhanping Jin, The Chinese Ceramic Society, China

Xin Cheng, University of Jinan, China

Vice Chairs

Fu Tan, The Chinese Ceramic Society, China

Jinyang Jiang , Southeast University, China

Jinxiang Hong, Sobute New Materials Co., Ltd., China

Peitao Xu, Sinoma International Engineering Co., Ltd., China

Members

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Jiayuan Ye, China Building Materials Academy Co., Ltd., China

Pengkun Hou, University of Jinan, China

Junmei Hu, LC^3 Global Project Manager, Switzerland

Xiaoxin Fu, The Chinese Ceramic Society, China

Cheng Yu, Sobute New Materials Co., Ltd., China

Xiaohui Zeng, Central South University, China

Conference Traffic Information

Nanjing Lukou International Airport → Holiday Inn Nanjing Qinhuai South

1. Online cars or taxies

The 23-kilometer journey takes about 25 minutes and costs about 70 RMB.

2. Metro (transfer required)

Take Metro Line S1 to Nanjing South Railway Station, transfer to Metro Line 3 to Mozhou East Road Station and walk about 200 meters.

Nanjing South Railway Station → Holiday Inn Nanjing Qinhuai South

1. Online cars or taxies

The 18-kilometer journey takes about 20 minutes and costs about 60 RMB.

2. Metro

Take Metro Line 3 to Mozhou East Road Station and walk about 200 meters.

Nanjing Railway Station → Holiday Inn Nanjing Qinhuai South

1. Online cars or taxies

The 30-kilometer journey takes about 30 minutes and costs about 100 RMB.

2. Metro

Take Metro Line 3 to Mozhou East Road Station and walk about 200 meters.

Weather Forecast

Wednesday, 15 May	Thursday, 16 May	Friday, 17 May	Saturday, 18 May
25° 13°	26° 17°	30° 20°	31° 20°

The data is derived from historical averages.

Conference Contact

Conference Contact	Cheng Yu: 13770600635 Xiaoxin Fu: 13426235793
Pre-conference Doctoral Course	Shuai Ding: 13259466568 Chang Gao: 13770939505
Registration, Payment, Invoices	Xiaoxin Fu: 13426235793 Ruochen Jiang: 17307377729
Conference Venue, Presentations	Zhen Li: 15151869205 Yichuan Zhou: 18323040898
Transportation, Catering, Accommodation	Yuting Qiao: 15951660403 Yan Zhang: 18252092110
Exhibition	Xiao Lvy: 18653776309
Technical Visting	Shouzhi Zhang: 13809042569 Zihao Liu: 13083123170

The Chinese Ceramic Society

Founded in March, 1945, The Chinese Ceramic Society (CCerS) is an academic, non-profit-making corporate and social organization for professionals engaged in the science and technology of inorganic nonmetallic materials. As an affiliate to China Association for Science and Technology, CCerS has the legal person status of a social organization.

According to the development of academic discipline and need of work, CCerS has set up 32 branches including sub-committee, professional committee and working committee, which are the components of the society. The 26 sub-committees are building materials, cement, ceramics, concrete and cement, crystal growth and materials, electronic glass, enamel, engineering technology, environment protection, fast ionic conductor, film and coating, glass, glass fiber, glass fiber reinforced plastics and composite materials, industrial petrology, intelligent and equipment technology, micro nano technology, mineral materials, nonmetallic minerals, refractory, sol-gel, solid waste and ecological materials, special ceramics, special glass, test and inspection technology, thermal insulation materials. The professional committees are water proof materials and building and sanitary ceramics. Five working committees are science popularization, academic, technical consulting, academic ethics and youth working committee. CCerS owns 50 group members and more than 22,000 individual members.

CCerS headquarter has administration department, domestic department, international department, editing and publishing department and consultative department.

The business scope of CCerS includes academic exchange, technology exhibition, scientific and technological books and periodicals edition and publication, continuing education and scientific popularization, technical consultation, services, hosting China Glass, etc. The Journal of the Chinese Ceramic Society, The Journal of Materiomics, The Bulletin of the Chinese Ceramic Society are edited and published by CCerS.

CCerS has joined in five international organizations including International Commission on Glass and International Ceramic Federation. Meanwhile, CCerS has established bilateral and multilateral friendly relationship with relative academic organizations in USA, Europe, Australia, Korea, Japan, etc.

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Journal of the Chinese Ceramic Society (硅酸盐学报)

Indexed by EI, Scopus, CSCD

◆Introduction

Journal of the Chinese Ceramic Society, founded in 1957, is focused on the fields of **inorganic and non-metallic materials**. The main purpose of the journal is to report the latest creative achievements in new research, new processes and new techniques.

◆Achievements

1. Selected by the Excellence Action Plan for China STM Journals;
2. Chinese Core Journal (PKUCCJ), Core Journals of Chinese Science and Technology;
3. Repeatedly recognized as "Chinese Excellent Scientific And Technological Journals" and "Hundred Chinese Outstanding Academic Journals";
4. T1 Journals in the Field of High-Quality Scientific and Technological Journals in Inorganic Non-metallic Materials.

◆Editors-in-Chief

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Jing-Feng Li
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Jianrong Qiu
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Peiyu Yan
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Shaoming Dong
Shanghai Institute of Ceramics, Chinese Academy of Sciences

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Chongqing University

Caijun Shi
Hunan University

Jiwei Zhai
Tongji University

◆Scopes

Cement-based materials; Mineral material and biology and ecology material; Glass and non-crystalline solid; Artificial crystal, Structural materials (ceramics, composite materials, *etc*.); Energy materials (materials for applications in solar energy, battery, fuel cell, hydrogen storage, nuclear energy, *etc*.); Functional materials (multifunctional materials, electronic materials, magnetic materials, optical materials, *etc*.)

Homepage: https://jccsoc.cbpt.cnki.net

E-mail: jccs@ceramsoc.com

Tel: 010-57811253

Journal of Materiomics

SCI (IF = 9.4)，Scopus (CiteScore = 12.7)

◆Introduction

The *Journal of Materiomics* (JMAT) aims to provide a continuous forum for the dissemination of research in the general field of materials science, particularly systematic studies of the relationships among composition, processing, structure, property, and performance of advanced materials. Supported by the Chinese Ceramic Society, JMAT is a peer-reviewed open-access journal, indexed in SCIE and Scopus.

◆Milestones

- 2023 China's Most Internationally Influential Academic Journals (TOP 5%) for 4 years
- 2022 IF = 9.4, First entry into the Chinese Academy of Sciences Q1 category
- 2021 IF = 8.589, Excellent Paper Award from the China Association for Science and Technology
- 2020 IF = 6.425, From quarterly publication to bimonthly publication
- 2019 Indexed by SCI, IF = 5.797, Excellence Action Plan for China STM Journals
- 2018 First CiteScore = 6.52
- 2017 Indexed by Scopus/ESCI

◆Editors-in-Chief

Jing-Feng Li
Tsinghua University, China

Samuel S. Mao
University of California at Berkeley, USA

Cewen Nan
Tsinghua University, China

◆Scopes

1. Functional materials, including ferroelectrics, piezoelectrics, multiferroics, magnetics; semiconductors, optoelectronic and electronic materials, *etc*;
2. Advanced energy materials for applications in solar energy, battery, fuel cell, thermoelectric conversion, hydrogen storage, *etc*;
3. Advanced structural ceramics including ceramic composite materials;
4. Nano-scale and low dimensional materials towards promising for nanotechnology and environmental science;
5. Multi-scale design and characterization of advanced functional materials.

Homepage: https://www.sciencedirect.com/journal/journal-of-materiomics

E-mail: jmat@ceramsoc.com

Tel: 010-57811252

School of Material Science and Engineering, Southeast University

The School of Material Science and Engineering, Southeast University has a long history, and its predecessor can be traced back to the National Central University during Republic of China.

In 1928, National Central University began setting up several undergraduate majors based on material science and engineering, such as Casting, Forging, etc. During the spring in 1947, the Department of Civil Engineering in National Central University built up the first laboratory focused on the concrete properties. In 1952, the first undergraduate students majored in Casting were enrolled. In 1955, the enrollment began in the major of Construction Material and Product. In 1984, according to the necessities in the development of the industries and materials, the university combined Casting, Metallurgy and other disciplines into the Department of Material Science and Engineering. After the department was integrated with several majors from deferent Departments, such as the Concrete and Construction Material in Civil Engineering, and Advanced Material Processing in Mechanical Engineering, it was changed to the School of Material Science and Engineering in 2006.

The School of Material Science and Engineering consists of four departments, namely, Metallic Material, Civil Engineering Material, Material Processing and Functional Material. It has a doctoral program and a postdoctoral station in the first-level discipline of Material Science and Engineering, which contains three second-level disciplines of Material Physics and Chemistry, Material Processing and Engineering, and Material Science; furthermore the school itself set up a second-level disciplinary doctoral program in Civil Engineering Material.

The material science and engineering discipline was chosen as one of the first batch of national "first-class disciplines" in 2017. It was successfully into the second round of the "first-class disciplines" in 2021, where it is now one of Southeast University's 12 "first-class disciplines". The undergraduate program of Material Science and Engineering is the key and brand major in Jiangsu Province and ranked as the first-class in the nation. The disciplines of New Materials and the Application, and Material Science are top ones in Jiangsu Province. In 2021, the material science and engineering discipline rose to the top 1‰ in the ESI worldwide discipline ranking.

Exhibition

- CBMI Construction Co., Ltd.
  中材建设有限公司

- Beijing Limecho Technology Co., Ltd.
  北京青檬艾柯科技有限公司

- Beijing HomeVic Development Co., Ltd.
  北京鸿锐嘉科技股份有限公司

- Suzhou Niumag Analytical Instrument Corporation
  苏州纽迈分析仪器股份有限公司

- Beijing NELD Intelligent Technology Co., Ltd.
  北京耐尔得智能科技有限公司