

The XVIII International Congress on Mine Surveying was successfully held in China

From October 26th to 29th, 2023, The XVIII International Congress for Mine Surveying was held in Xuzhou, China. This Congress was instructed by the International Society for Mining Surveying, the Chinese Coal Society, and the Chinese Society for Geodesy, Photogrammetry and Cartography. It was organized by China University of Mining and Technology, China University of Mining and Technology (Beijing), Henan Polytechnic University, and Anhui University of Technology. It was supported by the World Mining Congress, the International Union of Geodesy and Geophysics, the International Association of Geodesy, the International Cartographic Association, and the Society of Mining Professors, co-organized by Shanghai Huace Navigation Technology Co., Ltd., Xi'an Coal Science Transparent Geological Technology Co., Ltd., and Hexconn Surveying and Geographic Information System (Qingdao) Co., Ltd. The congress attracted 686 experts, scholars, and technical personnel from 32 countries around the world, including Germany, Russia, South Africa, Australia, the United States, Poland, and other countries in mining surveying and related fields. Focusing on the theme of "Smart Surveying, Green Mines", the congress organized academic discussions, conducted academic exchange, and promoted technical exhibition, adding intelligence and strength to the high-quality development of smart and green mines.



Opening ceremony of ISM 2023 (1)



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In the morning of October 27th, 2023, the opening ceremony of the congress was presided over by Professor Huang Leting, President of the International Society for Mine Surveying and Professor of China University of Mining and Technology. Song Xuefeng, President of China University of Mining and Technology, Zou Youfeng, Secretary of the Party Committee of Henan Polytechnic University, Zhang Pingsong, Vice President of Anhui University of Technology, Liu Feng, President of the China Coal Society, Song Chaozhi, President of the Chinese Society for Geodesy, Photogrammetry and Cartography, Shahbaz Khan, Head of the UNESCO Beijing Representative Office, Zhong Weihua, Vice Mayor of Xuzhou City, and Wang Ruiyao, Deputy Director of the Land and Mapping Department of the Ministry of Natural Resources, delivered speeches at the congress.



ISM President, Huang Leting, hosted the opening ceremony



President of China University of Mining and Technology, Song Xuefeng, delivered a welcome speech



Secretary of the Party Committee of Henan Polytechnic University, Zou Youfeng, delivered a speech



Vice President of Anhui University of Technology, Zhang Pingsong, delivered a speech



President of the China Coal Society, Liu Feng, delivered a speech



President of the Chinese Society for Geodesy, Photogrammetry and Cartography, Song Chaozhi, delivered a speech



Head of the UNESCO Beijing Representative Office, Shahbaz Khan, delivered a speech



Vice Mayor of Xuzhou City, Zhong Weihua, delivered a speech



Deputy Director of the Land and Mapping Department of the Ministry of Natural Resources, Wang Ruiyao, delivered a speech

During the keynote speeches, Li Deren, academician of the Chinese Academy of Sciences and the Chinese Academy of Engineering, Axel Preuße, vice-president of ISM and professor of the Aachen University of Technology, Syd S. Peng, academician of the United States National Academy of Engineering, Sun Heping, academician of the Chinese Academy of Engineering, Xue Sheng, professor of Anhui University of Technology, Bian Zhengfu, Chair of ISM Commission I, and vice president of the China University of Mining and Technology, Ryszard Hejmanowski, Chair of the ISM Commission IV, Professor at AGH University, Li Quansheng, Researcher of National Energy Group, Huang Leting, ISM president and Professor of the China University of Mining and Technology, Jin Shuanggen, Academic Vice President of Henan Polytechnic University, Professor Wang Yunjia from China University of Mining and Technology, Simit Raval, Chair of the ISM Commission V and Professor of the University of New South Wales, Zhang Kefei, Professor of the China University of Mining and Technology, and General Manager Huang Ye of the Mining Industry Department of Shanghai Huace Navigation Technology Co., Ltd. delivered 14 conference reports, showcasing new developments in mining surveying theory and technology both domestically and internationally.



Keynote speech by Li Deren, academician of the Chinese Academy of Sciences and the Chinese Academy of Engineering, with presentation title of “Interconnected intelligent remote sensing satellites and application – From LuoJia satellites to orient smart eye constellation”



Keynote speech by Axel Preuße, vice-president of ISM and professor of the Aachen University of Technology, with presentation title of “A compendium of mine surveying in Germany 2023”



Keynote speech by Syd S. Peng, academician of the United States National Academy of Engineering, with presentation title of “Room and pillar mining method and its surface subsidence features in U.S. coal mines”



Keynote speech by Sun Heping, academician of the Chinese Academy of Engineering, with presentation title of “Scientific significance of deep ultra-high precision multi-physical field observation”



Keynote speech by Xue Sheng, professor of Anhui University of Technology, with presentation title of “Gas (methane) emission reduction and low-carbon utilization strategies in coal development”



Keynote speech by Bian Zhengfu, chair of ISM Commission I, and vice president of the China University of Mining and Technology, with presentation title of “Technology innovation of mining surveying for future mining industry”



Keynote speech by Ryszard Hejmanowski, chair of the ISM Commission IV, Professor at AGH University, with presentation title of “To the accuracy of the predicted deformation caused by underground deposits extraction”



Keynote speech by Li Quansheng, Researcher at National Energy Group, with presentation title of “Technological innovation and engineering practice of coal ecological protection mining”



Keynote speech by Huang Leting, president of ISM and Professor of the China University of Mining and Technology, with presentation title of “Evolution mechanism of coal mining subsidence disaster chain and systematic disaster Reduction”



Keynote speech by Jin Shuanggen, Academic Vice President of Henan Polytechnic University, with presentation title of “Integrated space-air-ground sensing and its applications in mining and ecosystem environments”



Keynote speech by Wang Yunjia, Professor of China University of Mining and Technology, with presentation title of “70 years' development and prospects of mining surveying in China”



Keynote speech by Simit Raval, chair of the ISM Commission V and Professor OF the University of New South Wales, with presentation title of “Advancements in digital mapping and monitoring for mine operations”



Keynote speech by Zhang Kefei, Professor of the China University of Mining and Technology, with presentation title of “Space mining and geospatial - the next frontier”



Keynote speech by General Manager Huang Ye of the Mining Industry Department of Shanghai Huace Navigation Technology Co., Ltd., with presentation title of “Using precise spatiotemporal information technology to assist in the construction of digital mines”

On the October 28th 2023, the congress organized 12 parallel sessions including international mining surveying education and disciplinary development, digitalization of mines and mineral resources, new surveying and mapping equipment and

technologies, monitoring of mining subsidence and disasters, geological and ecological environment monitoring and governance, sustainable development and comprehensive utilization of resources, land reclamation and ecological restoration in mining areas, remote sensing monitoring of mineral mining and utilization, architecture and urban underground space, GNSS technology and innovative applications, modern space information technology and future mining, international youth scholars forum, with a total of 169 oral presentations and 43 PICO (Presenting Interactive Content) presentations. The delegates had a warm exchange on cutting-edge technology in mining surveying, establishing extensive connections for further international cooperation. The post-graduate forum, which was launched for the first time, attracted 109 students to submit full papers. A total of 83 oral presentations were arranged for post-graduate students, and discussions were conducted on four topics: GNSS, mine surveying, remote sensing, and ecological environment. International renowned experts were invited to comment and exchange ideas, expanding the international academic perspective of post-graduate students.



Parallel sessions



Technical exhibitions

In the morning of the October 26th and the afternoon of the October 28th, Part A and Part B of the 50th Presidium Meeting of the International Society for Mine Surveying were held in Beijing and Xuzhou, respectively, organized by China University of Mining and Technology (Beijing) and China University of Mining and Technology. More than 70 delegates, including the president and vice president of the International Society for Mine Surveying, Chair of ISM Commissions, national representatives, and observers, attended the meeting. In part A of the presidium meeting, Professor Ge Shirong, president of China University of Mining and Technology (Beijing) and academician of the Chinese Academy of Engineering, attended and delivered a speech. Professor Cui Ximin, Vice President of China University of Mining and Technology (Beijing), presided over the meeting. Professor Huang Leting, ISM President, introduced the preparation and schedule of the congress, which will include the nomination of the chair of ISM Commissions, ISM awards, establishment of Coordination Division, bidding for the 19th International Congress for Mine Surveying, and bidding for the 51st and 52nd Presidium Meetings. The delegates engaged in discussions, actively offered suggestions, and looked forward to the broad future of mine surveying, clarifying the next development direction of ISM. In Part B of the Presidium Meeting, Bian Zhengfu, Vice President of China University of Mining and Technology, attended the meeting, and Professor Huang Leting, ISM President, presided over the meeting, confirmed the new ISM members, confirmed the chair and vice chair of the ISM commissions, conducted a bidding for the hosting rights of the 20th International Congress for Mine Surveying, confirmed the hosting locations of the 51st and 52nd Presidium Meetings, nominated four new country members, announced the establishment of the ISM Coordination Division at China University of Mining and Technology, and proposed to expand seed commissions based on the development needs of new technologies and fields, to lay a solid foundation for the better and faster

development of the International Society for Mine Surveying. On the meeting, Chinese scholars initiated and organized a discussion on the implementation of China's eight actions to support high-quality co-construction of the "the Belt and Road" in the field of smart surveying and mapping and green mines, which was widely responded by delegates of the 11 countries who join the Belt and Road Initiative, including China, Russia, South Africa, Kazakhstan, Poland, Pakistan, Uzbekistan. Delegates signed the Declaration of Industry-University-Research Cooperation of Smart Surveying and Green Mine among "the Belt and Road" Countries (Xuzhou Dalong Lake Declaration).



Part A of the 50th ISM Presidium Meeting in Beijing



Part B of the 50th ISM Presidium Meeting in Xuzhou

In the afternoon of the 26th October, the Seminar on the 70th Anniversary of Mine Surveying in China, hosted by the Mine Surveying Professional Committee of the

Chinese Society for Geodesy, Photogrammetry and Cartography, and organized by the School of Environment and Spatial Informatics, China University of Mining and Technology, was held in Xuzhou. Professor Bian Zhengfu, Vice President of China University of Mining and Technology, attended the meeting and delivered a speech. The meeting was chaired by Professor Zheng Nanshan, Executive Dean of the School of Environment and Spatial Informatics. More than 150 representatives from relevant industry universities, research institutes, and enterprises attended the seminar. Professor Bian Zhengfu warmly welcomed the delegates, emphasizing the important role of surveying and mapping in mineral development. He reviewed the development process, industry transformation and upgrading, and development of mining surveying based on his own experience, and looked forward to the congress promoting the development of modern mine surveying. Wang Yunjia, Chair of the Mining Surveying Professional Committee of the Chinese Society for Geodesy, Photogrammetry and Cartography and Professor of the School of Environment and Spatial Informatics, Zheng Nanshan, Executive Dean of the School of Environment and Spatial Informatics, Yuan Zhanliang, Dean of the School of Surveying and Land Information Engineering at Henan Polytechnic University, and Yu Xuexiang, Dean of the School of Spatial Information and Surveying Engineering at Anhui University of Technology, successively gave special presentations. During the free discussion of the seminar, Professor Zhang Guoliang, a senior mine surveying expert from China University of Mining and Technology, gave a speech as a representative of the veteran teacher. He reviewed the history of the establishment of the mine surveying profession in 1953 and affirmed the recent development of the surveying and mapping discipline. Wang Ruiyao, Deputy Director of the Department of Land Surveying and Mapping of the Ministry of Natural Resources, Zou Youfeng, Secretary of the Party Committee of Henan Polytechnic University, Sun Heping, Academician of the Chinese Academy of Engineering, Zhang Yongsheng, Professor of the Information Engineering University of the Strategic Support Force, Xie Zhong, Professor of the China University of Geosciences (Wuhan), made speeches respectively, fully affirming the brilliant achievements of mine surveying in China in the past 70 years and putting forward pertinent suggestions. The attending delegates reviewed the profound history of mine surveying and unanimously agreed that it is necessary to actively promote the deep integration of the Internet, big data, artificial intelligence, and mine surveying, apply new advances, theories, knowledge, and technologies in mine surveying to the construction of smart and green mines, and jointly make new contributions to the innovative development of mine surveying.



Group photo of the Seminar on the 70th Anniversary of Mine Surveying in China

During the congress, special seminars were also held on methane observation and quantification, as well as on the collaborative perception of spatial information by sky, ground, and wells. Journals such as International Journal of Coal Science & Technology, China Mining, and Metal Mines will organize special issues to publish the academic outcomes of the delegates.



Artistic programs



Drone technology performances

At the closing ceremony on the 28th October, the International Society for Mine Surveying presented 1 Lifetime Achievement Award, 1 Prestigious Contribution Award, and 9 Young Scientist Awards. 12 Best Oral Reports, 9 Best PICO, and 19 Best Student Papers were awarded. The congress held a flag handover ceremony. The teachers and students from the host university also carefully prepared exciting cultural and artistic programs and drone technology performances, presenting a visual and auditory feast for the delegates.



Best Student Paper Award



Best PICO Award



Best Oral Presentation Award



ISM Young Scientist Award



ISM Prestigious Contribution Award



ISM Lifetime Achievement Award

On the 29th October, the congress organized 40 foreign delegates to visit Shanghai Huace Navigation Technology Co., Ltd. for technical investigation, and visited Huace Navigation's spatiotemporal intelligent exhibition hall and research and development laboratory on site, promoting cooperation between China and Russia, Kazakhstan, Poland and other countries in surveying and mapping, and geographic information equipment technology.



Technical investigation in Shanghai Huace Navigation Technology Co., Ltd.(1)



Technical investigation in Shanghai Huace Navigation Technology Co., Ltd.(2)

This congress has promoted the interdisciplinary integration of intelligent, efficient, and accurate mine surveying technology in a new era, a new model for the development of green mines, and injecting new impetus into the development of global smart surveying and green mining industry. The International Society for Mine Surveying was established in the Czech Republic in 1969, with 43 member countries. It holds an international congress every three years and an annual meeting of the Presidium. The 19th International Congress for Mine Surveying will be held in Cape Town, South Africa in 2026, the 20th International Congress for Mine Surveying will be held in Uzbekistan in 2029, and the 51st and 52nd ISM Presidium Meetings will be held in South Africa and Poland, respectively.