ICSOBA
The Aluminium Industry Forum

43rd CONFERENCE AND EXHIBITION
ICSOBA 2025 in Nanning, China

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26-31 October 2025 | Nanning, China & Online

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The International Committee for Study of Bauxite, Alumina, and Aluminium (ICSOBA) hosted its 43rd International Conference and Exhibition from October 26 to 31, 2025, at the Howard Johnson CAEXPO Plaza in Nanning, Guangxi, China.

This was the third ICSOBA conference held in China, following successful events in Zhengzhou, Henan, in 2010 and 2014.

The 2025 conference reflected ICSOBA's ongoing commitment to engaging with the fast-growing aluminium sector in the Asia-Pacific region, demonstrating both technological leadership and promotion of sustainable industrial practices.

ICSOBA 2025 in Nanning was particularly timely. Guangxi boasts abundant bauxite resources and has established a complete and modern aluminium industrial chain. The city of Nanning is actively advancing its vision of becoming a "Green Aluminium Capital," providing an ideal backdrop for discussions on sustainable technologies, decarbonization, and innovative industrial practices. The region's focus on green growth exemplifies how the aluminium industry can integrate environmental responsibility with industrial development.

Established in 1963, ICSOBA has stood as a cornerstone for global cooperation and technological innovation in the aluminium industry. Its continuous efforts in promoting scientific exchange and industrial progress have created a platform that drives knowledge dissemination and collaboration worldwide.

Originally focused on bauxite, ICSOBA gradually expanded to include alumina, and in 1969, electrolysis. In 1971, a symposium in Milan was dedicated exclusively to anodes in aluminium cells. In 2013, marking ICSOBA's 50th anniversary, the conference covered bauxite, alumina, anodes in electrolysis, and aluminium electrolysis, alongside a historical review of the best papers published by ICSOBA. Over the years, ICSOBA has continually broadened its scope to address evolving challenges in the industry. In 2017, the Bauxite Residue session was launched to highlight the increasing importance of safe storage and valorisation of bauxite residue. In 2023, the conference expanded to include the rapidly growing field of casthouse operations. In 2024, the IAI-Women in Aluminium session was held for the first time, underscoring the organization's commitment to diversity and inclusion in the sector.

This year's conference attracted nearly 700 participants, with 602 attending onsite and 62 participating online. The technical program included 13 keynote presentations and 220 technical papers. To accommodate the growing number of submissions, the conference was extended, for the first time, to four full days, featuring five parallel technical streams. This expansion not only allowed for more comprehensive coverage of the aluminium value chain but also provided participants with increased opportunities for networking, collaboration, and knowledge sharing.

The Bauxite session featured 20 papers, focusing on modern beneficiation technologies that are intensively being developed in China, exploration methods, new deposit development, mining operations, mine rehabilitation, and tailings management. Emphasis was placed on environmentally responsible practices, sustainable mining, and innovative approaches to resource utilization.

The Alumina session, with 51 papers, addressed a wide range of topics related to the Bayer process, including process design and chemistry, red and white side operations, energy optimization, operational improvements, digitalization, alternative products, and emerging processes. These presentations highlighted the importance of innovation in improving efficiency, reducing environmental impact, and enabling the transition toward low-carbon alumina production.

The Electrodes session, comprising 24 papers, focused on raw materials and formulations for green anode production, anode baking furnace design, process modelling, operational practices, environmental control, and advances in cathode technology.

The Aluminium Electrolysis session showed a record number of 91 papers, covering potline operation, energy efficiency and low-energy technologies, pot control and feeding systems, emissions management, gas collection and scrubbing, decarbonization initiatives, environmental and safety practices, cathode lining technologies, spent pot lining (SPL) recycling, pot busbar design, and magnetohydrodynamic (MHD) and thermal modelling. These papers highlighted both the technological innovation and the sustainability-driven approaches shaping the future of aluminium production.

The Casthouse Operations session featured 14 papers, emphasizing casting technologies and process control, recycling and environmental performance, artificial intelligence and digitalization, modelling and simulation, and alloy development.

Discussions during the conference demonstrated how technological innovation, process optimization, and digital tools are enabling increased efficiency, resource conservation, and improved product quality throughout the industry.

Eleven Best Paper awards were presented to outstanding authors across the Bauxite, Alumina, Bauxite Residue, Electrodes, Aluminium, and Casthouse Operation subjects.

ICSOBA warmly congratulates all award-winning authors and co-authors for their exceptional technical contributions and extends its gratitude to every contributor who helped make ICSOBA the "Technology Conference of the Aluminium Industry, **for** the Aluminium Industry."

Discover the 2025 award recipients at Best Papers Awards - ICSOBA and join in celebrating their achievements.

Additionally, ICSOBA released the 2,600-page all-digital TRAVAUX proceedings, reaching a new level of editorial excellence and reflecting the organization's commitment to producing comprehensive, high-quality documentation of the latest research and technological advances in aluminium production.

ICSOBA firmly believes that the creation of new knowledge and the implementation of innovative technologies depend on the training and development of highly qualified people — the students and young researchers who will lead our industry into the future.

With this vision, the ICSOBA Student Award was established to recognize the vital role of students and to encourage their active participation in the ICSOBA community.

This year, 12 awards were presented to outstanding young researchers: 2 Postdoctoral Fellows, 9 PhD students, and 1 Master's student. Each recipient received grants to support their attendance and presentation at ICSOBA 2025 in Nanning, China. These

awards not only recognize excellence but also help to foster mentorship, collaboration, and knowledge transfer between generations of aluminium professionals.

An exhibition of the latest technologies, equipment, and services was held with 25 participants, providing a platform for suppliers and innovators to engage with attendees, demonstrate emerging solutions, and showcase their contributions to sustainability and operational excellence.

The four-day ICSOBA 2025 technical sessions conference in Nanning concluded successfully on Friday, October 31, following field visits to:

- Guangxi Branch of Chinalco, a 2.2 Mt capacity alumina refinery, which is also the first industrialized project to recover iron concentrate from bauxite residue.
- Guangxi Hualei New Material aluminium smelter, equipped with 300 GP 500kA large-scale energy-saving electrolytic cells, with a capacity of 0.4 Mt of molten aluminium.

These field visits offered attendees unique insights into operational best practices, technological innovation, and large-scale implementation of sustainable solutions in the aluminium sector.

The conference is increasingly becoming a “gathering hub” for the global aluminium community, with ICSOBA’s partners organizing dedicated meetings alongside the main event. This year, the International Aluminium Institute (IAI) held its Bauxite & Alumina Committee (BAC) meeting on Thursday, October 30. Additionally, on Saturday, November 1, and Sunday, November 2, the International Forum for Comprehensive Use of Bauxite Residue (IFCUBR) workshop — sponsored by Chinalco and Rio Tinto, organized by the Chinese Nonferrous Metals Industry Association (CNIA), and supported by IAI — brought together all known experts and technology providers to explore advancements in this field. Participants contributed to shaping international strategies and partnerships aimed at significantly reducing bauxite residue generation, enhancing sustainable remediation practices, unlocking commercial opportunities in construction and metal extraction, and ultimately driving the industry toward a more sustainable and environmentally responsible future.

ICSOBA organizers extend their deepest gratitude to everyone who contributed at every stage of this significant industry event, including sponsors, exhibitors, corporate members, organizers, and volunteers.

Two major organizations in China — Aluminium Corporation of China Limited (Chinalco) and Nonferrous Metals Society of China (NFSOC) — served as Host Sponsors, while the Zhengzhou Research Institute actively supported ICSOBA in preparing the conference. Additional support came from Diamond-level sponsors EGA, Tokai Cobex, and NFC; Gold-level sponsors Bechtel, Hatch, Hydro, Reel Alesa, Rio Tinto, and Simonsen; Silver-level sponsors Alba, Alubase, Aluminium Dunkerque, Nalco

Water, Shanghai Heat Transfer Equipment, SNF Group, and Syensqo; and Bronze-level sponsors Beijing SIO Technology, Fives, Metlen Energy & Metals, Sohar Aluminium, and Techmo.

ICSOBA also acknowledges the encouragement and support from its **65 Corporate Members**, whose contributions help realize ICSOBA's vision to become the "Technology Conference of the Aluminium Industry, for the Aluminium Industry." We encourage you to see their profiles at https://icsoba.org/corporate and visit their websites for more information. Corporate Members participated in the annual ICSOBA Corporate Member Council to voice their views and influence ICSOBA's strategy.

Once again, the forum demonstrated that ICSOBA offers a unique platform for exchanging information on the latest innovations, making a significant contribution to knowledge dissemination in the aluminium industry. As always, all papers published in TRAVAUX No. 54, along with the presentations, are accessible on the ICSOBA website at https://icsoba.org/proceedings/43rd-conference-and-exhibition-icsoba-2025/.

Be part of this premier conference — the "Technology Conference of the Aluminium Industry, for the Aluminium Industry." Join us at ICSOBA 2026 to experience innovation, collaboration, and the latest technological advances that are shaping the future of this critical global sector.