

10th International Freiberg Conference

on IGCC & XtL Technologies



Transformation to a Low Carbon,
Circular and Hydrogen Economy

18–23 September 2022
Shanghai, China

Event description

The 10th International Freiberg Conference on IGCC & XtL Technologies, with its focus on the transformation to a low carbon, circular and hydrogen economy, will take place on 18–21 September 2022 in Shanghai, China, with technical tours from 22–23 September 2022 in Inner Mongolia, China.

The 10th International Freiberg Conference on IGCC & XtL Technologies is jointly organized by

- Institute of Energy Process Engineering and Chemical Engineering from the TU Bergakademie Freiberg (Freiberg, Germany),
- East China University of Science & Technology (Shanghai, China),
- Synfuels China Technology Co., Ltd. (Beijing, China),
- Institute of Coal Chemistry, Chinese Academy of Sciences (Taiyuan, China)

The 2022 conference will focus on one of the key challenges of the 21st century namely the transformation from a carbon intensive and linear economy towards a low carbon, circular and hydrogen economy.

We invite you to join us for exchanges about alternative and innovative developments associated with the sustainable conversion and utilization of carbon resources as well as challenges and opportunities for carbon intensive and dependent industries in the global transition towards net-zero and carbon neutrality.

In addition to fossil resources, biomass and carbon-containing wastes – in addition to CO₂ – are valuable carbon carriers which are gaining global importance as raw material for chemical production. With the global community's increasing focus on **zero-waste, circularity and carbon neutrality**, there is increasing pressure on industries to **increase resource efficiency, conserve primary resources, promote recycling and integrate renewable energy to reduce carbon emissions and waste.**

In view of these global developments and trends, the 10th International Freiberg Conference on IGCC & XtL Technologies will address a wide range of issues associated with the **transformation from a carbon intensive and linear economy towards a low carbon, circular and hydrogen economy on the path towards zero-waste and carbon neutrality.**

The event provides a high-level discussion forum to facilitate the exchange of information and expertise between **industry, scientific and political stakeholders along carbon value chains from extraction/sourcing, processing/refining to conversion, utilization, chemical (advanced/feedstock) recycling, hydrogen production, and electrification.** Participants are expected to come from diverse fields and industrial branches ranging from researchers and specialists engaged in **fundamental and applied R&D** to industry experts from industries in transformation such as **natural resource, mining, primary, chemical, metallurgy, automobile, energy, waste management, recycling and engineering sectors** as well as **equipment and technology providers/manufacturers.**

The conference provides a platform where international participants will have the opportunity to engage in in-depth exchanges about **alternative and innovative developments associated with carbon resources as well as challenges and possibilities for carbon intensive and dependent industries in their efforts to increase resource efficiency, reduce waste, promote recycling and circularity, and reduce emissions and leakages.**

Studies and new developments by researchers and technology developers as well as current or planned projects and operational experiences by plant operators related to a low carbon, circular and hydrogen economy shall be presented. Topics for presentations include:

1) **Feedstock & treatment processes**

- New and conventional feedstock for chemical utilization (MSW, RDF/SRF, plastic waste, sewage sludge, ocean waste, biowaste, agricultural and animal waste, carbon- and glass fiber composites, automobile shredder, petcoke, lignite, high ash high melting coals, ...),
- Feedstock treatment (drying, feeding, deashing, ...) and conversion (e.g. characterization, reaction kinetics, analytics of heterogeneous feedstock, trace components, contaminants, ...),
- Technologies for waste treatment (collection, sorting, crushing, agglomeration, baling, ...),
- ...

2) **Conversion processes, technologies & products**

- Low temperature conversion processes (e.g. extraction, torrefaction, pyrolysis, ...) and upgrading of products (e.g. tars, oils, coke, reforming, upgrading, hydrotreating, refining, ...),
- Chemical conversion processes and technologies (solvolysis, pyrolysis, gasification/co-gasification, direct liquefaction, integration of renewable H₂, ...),
- Electrification of conversion processes and technologies (e.g. application of plasma, microwave heating, inductive heating, ...),
- Synthesis gas treatment and synthesis technologies (CO₂-based syntheses, direct syngas conversion, MtO, MtG, MtK, Fischer-Tropsch, ...),
- CCUS - Carbon dioxide capture, storage and utilization (e.g. direct air capture, ...),
- Innovative cycles and gas turbine developments for IGCC and polygeneration (Allam cycle, ...),
- Hydrogen production, storage and supply (e.g. methane pyrolysis, SMR, ATR, gas POx, waste gasification, methanol, ...),
- Integration of ammonia and liquid H₂ in global energy market,
- High value carbon products (graphene, carbon fiber, carbon black, graphitic carbon, ...),
- ...

3) **Modeling & integrated assessment**

- Numerical modeling of conversion processes,
- Concept evaluations and flow sheet simulation (TEA – Techno-economic analyses, LCA – life cycle assessments),
- Risk assessment,
- ...

4) **Projects, trends and experiences**

- Industrial project development, industrial demonstration projects, industrial operation experience,
- Perspectives from industry (e.g. mining organizations, waste management companies, chemical industries, hydrogen economy, technology developers, ...),
- Trends (zero-waste cities, circular carbon economy, chemical/advanced recycling, hydrogen economy, electrification, ...),
- National and international industry/science networks and initiatives (e.g. zero waste, carbon neutrality, circular economy, hydrogen economy, ...),
- Sector coupling (e.g. energy with chemical and waste management/recycling sectors, ...),
- National/global boundary conditions (social, economic, regulatory, political) for sustainable carbon conversion to chemicals, transportation fuels and electricity,
- ...

We look forward to welcoming you for 5 days of intensive discussions with fellow experts and specialists at the conference in Shanghai in September 2022.

Registration Opportunities

18–23 September 2022 – Registration for PARTICIPANT (Presenter, Non-Presenter, NK2-Member) of the 10th International Freiberg Conference

Entry authorization to all scientific conference sessions including:

- A set of conference documents,
- Download option for conference presentations (after the conference).

Social conference program:

- Participation in the Welcome Reception (18 September 2022),
- Participation in the Conference Dinner (19 September 2022),
- Participation in the Krüger Poster Reception (20 September 2022),
- Food and beverages during lunch and coffee breaks (19–21 September 2022).

18–21 September 2022 – Registration for ACCOMPANYING Person of the 10th International Freiberg Conference

Social conference program:

- Participation in the Welcome Reception (18 September 2022),
- Participation in the Conference Dinner (19 September 2022),
- Participation in Special Social Events for Accompanying Persons (19–21 September 2022).

18 September 2022 – Registration for Technical Tour – ECUST

Technical Tour program including:

- Bus Transfer from Conference Hotel (JW Marriott Tomorrow Square) to East China University of Science and Technology (ECUST) on 18 September 2022 at 13:00 am
- Technical Tour to Labs and Pilot-Scale Gasification Facilities at ECUST – the Developer of the OMB Gasifier
- Bus Transfer from East China University of Science and Technology (ECUST) to Conference Hotel (JW Marriott Tomorrow Square) on 18 September 2022 at ca. 16:00 am

22–23 September 2022 – Registration for Technical Tour of the 10th International Freiberg Conference

Technical Tour program including:

- Bus Transfer from Conference Hotel (JW Marriott Tomorrow Square) to Shanghai Hongqiao Airport (SHA), departure from Hotel on 22 September 2022 at 6:00 am
- Charter Flight from Shanghai Hongqiao Airport (SHA) to Inner Mongolia on 22 September 2022
- All Bus Transfers in Inner Mongolia
- Technical Tour of Two Gasification Plants
- One Night Hotel Accommodation in Inner Mongolia
- Lunch and Dinner on 22 September 2022, and Breakfast and Lunch on 23 September 2022
- Charter Flight from Inner Mongolia to Shanghai Pudong Airport (PVG) on 23 September 2022, arrival at Pudong Airport at approximately 8:30 pm