

Program

8th International Conference on Chemical Looping

31 Aug - 4 Sept 2026, Manchester (UK)



www.iccl2026.com

We are delighted to welcome you to the 8th International Conference on Chemical Looping (ICCL2026), taking place at The University of Manchester, UK, from 31 August to 4 September 2026.

ICCL2026 continues a conference series that has brought the chemical looping community together since its first meeting in Lyon in 2010, followed by Darmstadt, Gothenburg, Nanjing, Park City, Zaragoza and, most recently, Banff in 2024. This year's conference is jointly organised by The University of Manchester and The University of Cambridge, and we are very pleased to welcome the international chemical looping community back to the UK.

Chemical looping has developed considerably since the first ICCL. While inherent CO_2 capture remains an important foundation of the field, chemical looping concepts are now being investigated and demonstrated across an increasingly diverse range of applications, including low-carbon hydrogen and syngas production, CO_2 utilisation, waste and biomass conversion, and the production of chemicals and other value-added products. Progress in oxygen-carrier materials, reactor design, process integration and scale-up is also bringing chemical looping technologies closer to industrial deployment.

ICCL2026 provides an opportunity to bring these different strands of our community together: from fundamental studies of materials and reaction mechanisms to reactor development, modelling, pilot-scale operation, process integration and industrial demonstration.

We have been delighted by the response from the community, with a strong international programme of oral and poster contributions that reflects both the breadth of the field and the progress being made towards practical applications. networking, culminating in a plenary discussion where we hope the community can reflect collectively on the progress of chemical looping and the priorities and challenges ahead.



An important part of ICCL has always been the opportunity to connect researchers at different stages of their careers and from different parts of the world. We particularly encourage PhD students and early-career researchers to use the conference to present their work, exchange ideas with established researchers and industrial colleagues, and build collaborations that will continue beyond Manchester.

The conference begins with our welcome reception on Monday 31 August, and throughout the week we hope there will be as much valuable discussion outside the lecture rooms as within them.

The programme also includes poster sessions and laboratory visits, as well as the Conference Gala Dinner on Thursday 3 September.

On behalf of the ICCL2026 Organising Committee, thanks for joining us in Manchester, sharing your latest research and contributing to the discussions that will help define the next stage of chemical looping research and deployment.

Profs. Vincenzo Spallina and Ewa Marek
Co-Chairs of the 8th International Conference on Chemical Looping
On behalf of the ICCL2026 Organising Committee



Vincenzo Spallina	The University of Manchester (United Kingdom)
Ewa Marek	Cambridge University (United Kingdom)
Stuart Scott	Cambridge University (United Kingdom)
Jasmin Kemper	IEAGHG (United Kingdom)
Alvaro Amieiro	Johnson Matthey (United Kingdom)
Ian Metcalfe	Newcastle University (United Kingdom)
Francisco Garcio-Labiano	Instituto de Carboquimica CSIC (Spain)
Alberto Abad	Instituto de Carboquimica CSIC (Spain)
Fabrizio Scala	University of Naples Federico II (Italy)
Christoph Müller	ETH Zurich (Switzerland)
Felix Donat	ETH Zurich (Switzerland)
Oyvind Langorgen	SINTEF (Norway)
Henrik Leion	Chalmers University (Sweden)
Jochen Ströhle	TU Darmstadt (Germany)
Vladimir Galvita	Ghent University (Belgium)
Fausto Gallucci	1CUBE & ZEFIRA (The Netherlands)
Angeliki Lemonidou	Aristotele University of Thessaloniki (Greece)
Fainxing Li	North Carolina State University (USA)
Liang-Shih Fan	Ohio State University (USA)
Kevin Whitty	Utah University (USA)
Robin Hughes	CANMET (Canada)
Nader Mahimpey	Calgary University (Canada)
Haibo Zhao	Huazhong University of Science & Technology (China)
Paul Niu	Nanyang Technological University (Singapore)
Laihong Shen	Southeast University (China)
Zhenshan Li	Tsinghua University (China)
Muhammad Aziz	The University of Tokyo (Japan)



Vincenzo	**Spallina**	University of Manchester
Ewa	**Marek**	University of Cambridge
Santiago	**Zapata Boada**	University of Manchester
Adam	**Zaidi**	University of Manchester
Isabel	**Pazmino Mayorga**	University of Manchester
Stuart	**Scott**	University of Cambridge
Joe	**Gebers**	University of Cambridge
Abu	**Kasim**	University of Cambridge
Wenting	**Hu**	Newcastle University
Yonliang (Harry)	**Yan**	Newcastle University
Yaoyao	**Zheng**	University of Nottingham
Fatih	**Gulec**	University of Nottingham
Christopher	**de Leeuwe**	Bath University
Zaheer Syed	**Abbas**	University of Southampton
Mingming	**Zhu**	Cranfield University



31st August

18:00 - 21:00	***Registration and Welcome Drink*** **Location:** Food Hall in Manchester | House of Social address: 10 Sir Howard Bernstein Approach, Manchester, M15 4ND

1st September

8:45 - 9:15	Registration at 2nd Floor Foyer Space			
9:15 - 9:40	WELCOME Conference at room LT-A			
9:40 - 10:20	KEYNOTE: Alvaro Amieiro, Johnson Matthey (LT-A)			
10:20 - 10:50	COFFEE BREAK 2nd Floor Foyer Space			
Session 1-1	LT-A	2A.011	2A.014	2B.002
10:50 - 12:40	Chemical Looping Combustion-1	Chemical Looping Water Splitting-1	Fundamentals of Chemical Looping-1	Materials for Chemical Looping-1
12:40 - 14:00	LUNCH 2nd Floor Foyer Space			
Session 1-2				
14:00 - 14:20	Chemical Looping Pilot Scale-1	Novel Chemical Looping Process-1	Chemical Looping Gasification & Reforming-1	Materials for Chemical Looping-2
15:20 - 15:50	COFFEE BREAK 2nd Floor Foyer Space			
Session 1-3				
15:50 - 17:10	Chemical Looping CO_2 Utilisation-1	Calcium Looping-1	Chemical Looping Combustion-2	Novel Chemical Looping Process-2

2nd September

9:00 - 9:30	REGISTRATION AND COFFEE 2nd Floor Foyer Space			
9:30 - 10:10	KEYNOTE: Zhenshan Li, Tsinghua University (LT-A)			
10:10: - 10:30	COFFEE BREAK 2nd Floor Foyer Space			
Session 2-1	LT-A	2A.011	2A.014	2B.002
10:30 - 12:50	Chemical Looping Pilot Scale-2	Fundamentals of Chemical Looping-2	Chemical Looping CO_2 Utilisation-2	Chemical Looping Combustion-3

11:50 - 13:10	LUNCH 2nd Floor Foyer Space			
Session 2-2				
13:10 - 14:30	Chemical Looping Gasification & Reforming-2	Reactor and Process Modelling-1	Novel Chemical Looping Process-3	Materials for Chemical Looping-3
14:30 - 15:00	COFFEE BREAK 2nd Floor Foyer Space			
15:00 - 17:00	Group Lab Visit and Poster Sessions (2A.012/2A.013)			

3rd September

9:00 - 9:30	REGISTRATION AND COFFEE 2nd Floor Foyer Space			
9:30 - 10:10	KEYNOTE: Mercedes Maroto-Valer, IDRIC (LT-A)			
10:10 - 10:30	COFFEE BREAK 2nd Floor Foyer Space			
Session 3-1	LT-A	2A.011	2A.014	2B.002
10:30 - 12:50	Chemical Looping Combustion-4	Calcium Looping-2	Fundamentals of Chemical Looping-3	Chemical Looping Reactor Desing
11:50 - 13:10	LUNCH 2nd Floor Foyer Space			
Session 3-2				
13:10 - 14:30	Novel Chemical Looping Process-4	Reactor and Process Modelling-2	Chemical Looping Gasification & Reforming-3	Chemical Looping Water Splitting-2
14:30 - 15:00	COFFEE BREAK 2nd Floor Foyer Space			
15:00 - 1600	Plenary Discussion - Lecture Theatre A (LT-A)			
16:00 - 17:00	Group Lab Visit and Poster Sessions (2A.012/2A.013)			
18:00 - 23:00	SOCIAL DINNER			

4th September

	2B.025	2B.026
9:30 - 10:30	EU project Workshops - part 1	Early Career Session - part 1
10:30 - 11:00	COFFEE BREAK 2nd Floor Foyer Space	
11:00 - 12:30	EU project Workshops - part 2	Early Career Session - part 2

Nancy Rothwell Building (2nd Floor Event Space)



31st August

18:00 - 21:00

Registration and Welcome Drink

Location: Food Hall in Manchester | House of Social
address: 10 Sir Howard Bernstein Approach, Manchester, M15 4ND
https://foodhall.houseofsocial.com/

The event also includes buffet dinner and drinks

QR code location

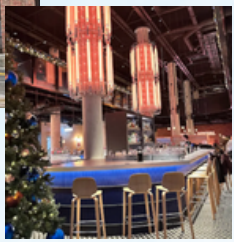
How to get there?

- **From Manchester Oxford Road (Station)**

Walking — best option:
approximately 8–12 minutes, roughly 0.5 mile.

Exit the station down Station Approach, turn right onto Oxford Street, then head toward Whitworth Street West / First Street. Continue toward the First Street area and follow the pedestrian route to Sir Howard Bernstein Approach.





- **From Manchester Piccadilly (Station)**

Walking: approximately 22–27 minutes, around 1.2 miles.

A straightforward route is: Piccadilly Station → Fairfield Street → Whitworth Street → Whitworth Street West → First Street → Sir Howard Bernstein Approach.
Free Bus: You can take Free Bus 1 directly from Piccadilly Station. For your destination, get off around Whitworth Street West / Deansgate-Castlefield, then walk approximately 5–8 minutes to Sir Howard Bernstein Approach. The Free Bus 1 runs every 10 minutes from 07:00–19:00 Monday–Friday, and is completely free.

3rd September	
19:00 - 23:00	***Social Dinner*** **Location: Etihad Stadium, Etihad Campus, Manchester M11 3FF**
	18:00 Coach from the Conference Venue to Etihad Stadium
	18:30 Welcome Drink
	event will run until 23:00
	23:00 Coach from Etihad Stadium to the University of Manchester

The Conference Gala Dinner will be held at the Etihad Stadium.

The Etihad Stadium is about 2 miles from the University of Manchester.

The coach will leave the Conference Venue at the University of Manchester from the Nancy Rothwell Building (South entrance) at 18:00.

Similarly, the coach will leave the stadium at 23:00 to bring all participants back to the University of Manchester.

QR code location







08:45 - 9:15	REGISTRATION AND COFFEE 2nd Floor Foyer Space
9:15 - 9:40	WELCOME Conference at room LT-A
9:40 - 10:20	KEYNOTE: Alvaro Amieiro, Johnson Matthey
10:20 - 10:50	COFFEE BREAK (2nd Floor Foyer Space)
	Session 1-1: Chemical Looping Combustion - 1 *Chair: Jose Ramon Fernandez*
10:50 - 11:10	**A082 - *Conversion Enhancement in a 10 kW_{th} Chemical-Looping Combustion Unit: Effect of Random Metal Packings*** **Nasrin Nemati;** Carl Johan Linderholm; Xiaoyun Li; Tamar Manouel; Magnus Rydén; Tobias Mattisson (Chalmers University of Technology)
11:10 - 11.30	**A207 - *Migration of Calcium in Biomass Ash in Oxygen Carrier Aided Combustion*** **Jinchen Ma;** Yingjie Mia, Haibo Zhao (Huazhong University of Science and Technology)
11:30 - 11:50	**A071 - *Pilot Scale Syngas Purification from Chemical-Looping Gasification of Residues*** **Philipp Eiden-Göbel;** Lisa Hassel; Jochen Ströhle; Bernd Epple (Technical University of Darmstadt)
11:50 – 12:10	**A083 - *Techno-Economic Comparison of Chemical Looping Combustion (CLC) Implementation in Canada and Sweden*** **Nader Mahinpey;** Frida Söderström; Amr Abdalla; Henrik Leion; Reza Kabganian (University of Calgary)
12:10 - 12:40	**A147 - Biomass Chemical Looping in the UK: The Promise, The Pressure, and The Priority** **Fatih Gulec** (University of Nottingham)
12:40 - 14:00	LUNCH BREAK (2nd Floor Foyer Space)
	Session 1-2: Chemical Looping Pilot Scale - 1 Chair: Ian Metcalfe
14:00 - 14:20	**A134: *Pilot-scale study on compact-fast dual interconnected fluidized bed*** **Jintao Jiang;** Shubo Chen; Shiyi Chen; Wenguo Xiang (Southeast University)

14:20: 14:40	**A066 - *Auto thermal test of 5 MW_{th} CLC pilot unit and scale-up to 20 MW_{th} CLC engineering demonstration***
	Li Zhenshan; Yang Wang; Jiaye Li; Weicheng Li; Xinglei Liu
14:40 - 15:00	**A027 - *Pilot-scale investigation of blast furnace gas upgrading via a combined chemical looping process***
	Robin Vercauteren; Michiel W.F. Van Cauwelaert; Lukas C. Buelens; Tong Liu; Hilde Poelman; Kevin M. Van Geem; Vladimir V. Galvita (Ghent University)
15:00 - 15:20	**A093 - *Scale-up and Demonstration of Sustainable Alkenyl Benzene Production through Chemical Looping Oxidative Dehydrogenation***
	Aaron Frye; Baitang Jin; Luke Neal; Fanxing Li (North Carolina State University)
15:20 - 15:50	COFFEE BREAK (2nd Floor Foyer Space)
	Session 1-3: Chemical Looping CO_2 Utilisation - 1 **Chair: Fatih Gulec**
15:50 - 16:10	**A107 - *Experimental study and thermodynamic modelling of $Ce_{0.8}Zr_{0.2}O_{2-\delta}$ pellets as oxygen carriers for counter-current chemical looping reverse water gas shift reaction***
	Matteo Fella; Yonliang Yan; Wenting Hu; Ian S. Metcalfe (Newcastle University)
16:10 - 16:30	**A114 - *Integration of Blast Furnace Gas–Based Methane Dry Reforming with Chemical-Looping RWGS for CO_2 Utilization***
	Tong Liu; Lukas C. Buelens; Michiel W.F. Van Cauwelaert; Hilde Poelman; Robin Vercauteren; Vladimir V. Galvita; Kevin M. Van Geem (Ghent University)
16:30 - 16:50	**A067 - *Development of novel perovskite oxides for H_2 and CO production via chemical looping***
	Yngve Larring; Zuoan Li (SINTEF)
16:50 - 17:10	**A80 - *Proof of concept of Chemical looping CO_2 splitting process as an alternative to sustainable aviation fuels***
	Arturo Cabello; Alberto O. García-Domínguez; Francisco García-Labiano; María T. Izquierdo; Luis F. de Diego (Instituto de Carboquimica (ICB-CSIC))

10:20 - 10:50	**COFFEE BREAK (2nd Floor Foyer Space)**
	Session 1-1: Chemical Looping Water Splitting - 1 *Chair: Shiyi Chen*
10:50 - 11:10	**A143 - *Tuning H_2/syngas production by tuning the redox properties of $La_{0.6}Sr_{0.4}M_xM'_{1-x}$(M,M'= Fe, Mn, Co)$O_3$ as oxygen carriers for chemical looping reforming of methane*** **Stefano Scognamiglio;** Anna Basco; Melania Musone; Alessandra Di Nardo; Giulia Sorbino; Gianluca Landi (CNR-STEM)
11:10 - 11.30	**A060 - *Molten Ni-ZnSn liquid metal catalysts for chemical looping water splitting*** **Chongyan Ruan;** Manyun Yin; Yuanhui Sheng; Yuting Ding; Haichen Xu; Hongling Guang; Yin Pan; Hongguang Jin (Institute of Engineering Thermophysics)
11:30 - 11:50	**A090 - *Y-Modified Iron-Based Oxygen Carrier for Low-Temperature Chemical Looping Water Splitting Hydrogen Production*** **Nanjuan Duan;** Lei Liu; Zhao Sun; Zhiqiang Sun (Institution Central South University)
11:50 – 12:10	**A004 - *Experimental Demonstration of a Sub-Pilot-Scale CounterCurrent Chemical Looping Reactor Using a Non Stoichiometric Oxygen Carrier for Low-Carbon Hydrogen*** **Yongliang Yan;** Matteo Fella; Wenting Hu; Ian S. Metcalfe (Newcastle University)
12:10 - 12:40	**A128 - *High-Entropy Perovskite for Chemical Looping Ammonia Cracking: Development, Testing, and Modelling*** ***Giuseppe Andriani;*** Adam Zaidi; Gianmaria Pio; Paolo Mocellin; Chiara Vianello; Ernesto Salzano; Vincenzo Spallina (University of Padua)
12:40 - 14:00	**LUNCH BREAK (2nd Floor Foyer Space)**
	Session 1-2: Novel Chemical Looping Process - 1 *Chair: Yaoyao Zheng*
14:00 - 14:20	**A109 – *Catalytic effects of Ru on chemical looping ammonia cracking using $La_{0.75}Sr_{0.25}Cr_{0.25}Mn_{0.75}O_{3-\delta}$ perovskite*** **Abu Farhan Bin AbuKasim**; Martin Keller; Ewa Marek (University of Cambridge)

14:20: 14:40	**A076 - *The Essence of Chemical Looping: Cross-Scenario Reconstruction for Ordered Energy and Matter Conversion*** Yongzhuo Liu (Qingdao University of Science & Technology)
14:40 - 15:00	**A069 - *Beyond-Equilibrium Syngas Production from Methane via Counter-Current Chemical Looping and Staged-Oxidation*** **William Martin;** Yuge Yao; Chongyan Ruan; Luke Neal; Fanxing Li (North Carolina State University)
15:00 - 15:20	**A068 - *Retrofitting Coal-fired Fluidized Bed by using metal as fuel: Iron Oxidation in a 3kW$_{th}$ Fluidized Bed Reactor*** **Margarita de las Obras Loscertales;** Alberto Abad; Yldeney Silva Domingos (Instituto de Carboquimica (ICB-CSIC))
15:20 - 15:50	COFFEE BREAK (2nd Floor Foyer Space)
	Session 1-3: Calcium Looping - 1 ***Chair: Fabrizio Scala***
15:50 - 16:10	**A120: *C–Ni–CaO Bifunctional Materials for Integrated Calcium Looping–Boudouard CO_2 Capture and Conversion: Role of Carbon Source*** **Jinyu Dai;** Cong Luo; Chenheng Zhangsun; Yan Tang; Xiaoshan Li; Liqi Zhang (Huazhong University of Science and Technology)
16:10 - 16:30	**A152: *Energy and Exergy Analysis of a 170 MW Cogeneration Plant Integrated with High-Temperature Calcium-Looping and Medium-Temperature Magnesium-Looping for CO_2 Capture*** ***Yangdi Zhou;*** Cong Luo; Jiayao Wan; Yan Tang; Fan Wu; Xiaoshan Li; Liqi Zhang (Huazhong University of Science and Technology)
16:30 - 16:50	**A126: *Modelling the performance of a CFB-Calcium Looping system under dynamic operating conditions*** **Maria Elena Diego;** Borja Arias; Juan Carlos Abanades (CSIC-INCAR)
16:50 - 17:10	**A204: *Cyclability and Humidity Driven Carbonation Behaviour of $Ca(OH)_2$ Granules for Direct Air Capture*** **Aylin Kemal;** Jack Shield, Navid Khallaghi, Seyed Ali Nabavi (Cranfield University)



10:20 - 10:50	**COFFEE BREAK (2nd Floor Foyer Space)**
	Session 1-1: Fundamental of Chemical Looping - 1 ***Chair: Fausto Gallucci***
10:50 - 11:10	**A153 - *A Pulsed Micro-Reactor Framework for Intrinsic Kinetic Parameter Evaluation of Gas–Solid Redox Reactions*** **Srinivas Krishnaswamy;** Puneeth Tuppaturi; Neelima Daliboyina (BITS Pilani K K Birla Goa Campus)
11:10 - 11.30	**A058 - *Analytical Solution for Reaction-Diffusion Equation of Oxygen Carrier Redox Kinetics in Chemical Looping*** ***Houze Li;*** *Yu Li (China University of Petroleum)*
11:30 - 11:50	**A160 - *Numerical modelling of microstructure-dependent transport-reaction coupling in an Fe-based oxygen carrier particle for chemical looping processes*** **Masashi Kishimoto;** Sota Shimamoto; Yuting Guo; Hiroshi Iwai (Kyoto University)
11:50 – 12:10	**A073 - *Investigation of the oxidation behavior of iron fines*** **Hai Co Nguyen;** Victor Purnomo; Henrik Leion (Chalmers University of Technology)
12:40 - 14:00	**LUNCH BREAK (2nd Floor Foyer Space)**
	Session 1-2: Chemical Looping Gasification & Reforming - 1 ***Chair: Laihong Shen***
14:00 - 14:20	**A202 - *Syngas production from biogenic resources through Chemical Looping Gasification*** **Teresa Mandiara;** Ignacio Ruiz-Irizar, María Teresa Izquierdo, Luis F. de Diego, Francisco García-Labiano (Instituto de Carboquimica (ICB-CSIC))
14:20: 14:40	**A100 - *Sustainable Hydrogen Production Through Engineering High-Entropy Catalysts for Efficient Photothermal Methanol Looping Reforming*** ***Xinfei Chen;*** Yan Lin; Zhen Huang (Guangzhou Institute of Energy Conversion)
14:40 - 15:00	**A055 - *Iron Carbide Mediated Syngas Production in an α-Alumina-Stabilised Fe_2O_3 Cermet Oxygen Carrier for Highly Selective Chemical Looping Methane Partial Oxidation and Decomposition*** **George Dury**; Wenting Hu; Evangelos Papaioannou; Ian Metcalfe (Newcastle University)

15:00 - 15:20	**A041 - *Production of hydrogen-rich syngas Via Sorption-Enhanced Chemical Looping Steam Reforming of Methane: Application of La-Modified Ca/Co Bifunctional Catalyst–Sorbents***
	Nader Mahinpey; Sepideh Namazi; Sanaz Daneshmand-Jahromi; Davood Karami (University of Calgary)
15:20 - 15:50	COFFEE BREAK (2nd Floor Foyer Space)
	Session 1-3: Chemical Looping Combustion - 2 ***Chair: Stuart Scott***
15:50 - 16:10	**A130 - *H_2S and NH_3 poisoning mechanisms of a CaMn-based perovskite oxygen carrier***
	Kexin Li; Lei Liu; Zhao Sun; Zhenshan Li; Zhiqiang Sun (Central South University)
16:10 - 16:30	**A116 - *Microstructural Evolution of copper smelter slag during Oxygen Carrier Aided Combustion of wood chips in a 12 MW_{th} CFB boiler***
	Tamar Manouel; Hampus Lindmark; Jesper Liske; Magnus Rydén; Tobias Mattisson (Chalmers University of Technology)
16:30 - 16:50	**A010 - *Evaluation of high entropy oxide as an oxygen carrier in a 1 kW_{th} continuous CLC unit***
	Ana Natalia Méndez Arias; Iñaki Adánez-Rubio; María Teresa Izquierdo (Instituto de Carboquimica (ICB-CSIC))
16:50 - 17:10	**A003 - *Surface energy minimization principle endowing Fe outwards-migration: Structural evolution and attrition mechanism of ilmenite oxygen carrier***
	ShiXuan Shen; Xiaobiao Ma; Zhenwu Miao; Laihong Shen; Jing Liu; Tomasz Czakiert (Southeast University)

10:20 - 10:50	COFFEE BREAK (2nd Floor Foyer Space)
	Session 1-1: Material for Chemical Looping - 1 *Chair: Ye Wu*
10:50 - 11:10	**A164 - *Multiscale Investigation of Phase Evolution and Abrasion Mechanisms in the Redox of Cu-Fe/Al_2O_3-TiO_2 Oxygen Carriers*** **Jinxia Quan;** Zhenwu Miao; Laihong Shen (Southeast University)
11:10 - 11:30	**A094 - *High-Throughput Computational-Experimental Design of Mixed Oxides for Redox-Enabled CO_2 Sorption and Beyond*** **Fanxing Li;** Runxia Cai; Mahe Rukh; Leo Brody; Yuge Yao (North Carolina State University)
11:30 – 11:50	**A150 - *Stress-Mediated Morphological Evolution of Iron-Based Oxygen Carriers: Atomic Insights into Redox Kinetics for Hydrogen Storage*** **Yifan Wang;** Yuzhe Li; Kun Xu; Kate Reidy; Xiaolin Zheng; Leora Dresselhaus-Marais (Okinawa Institute of Science and Technology)
11:50 - 12:10	**A108 - *Redox cycling-induced synthesis of highly dispersed Ni/$NiAl_2O_4$ oxygen carriers for chemical looping dry of methane: a mechanistic investigation*** **Ruixue Fang;** Laihong Shen (Southeast University)
12:40 - 14:00	LUNCH BREAK (2nd Floor Foyer Space)
	Session 1-2: Materials for Chemical Looping- 2 *Chair: Martin Keller*
14:00 - 14:20	**A065 - *From Battery Waste to High-Performance Oxygen Carriers: Modulating "Natural Defects" in Spent $LiCoO_2$ for Chemical Looping Syngas and Hydrogen Production*** **Jiyan Ma;** Jiaojiao Liu; Li Yang; Fang Liu (China University of Mining and Technology)
14:20: 14:40	**A005- *Iron Foundry waste for Chemical looping CO_2 splitting*** **Christopher de Leeuwe;** Adam Zaidi; Vincenzo Spallina (University of Bath)

14:40 - 15:00	**A023 - *Rational design of perovskite-type oxygen carriers with high redox activity for chemical looping combustion***
	Xiaobiao Ma; Jing Liu; Yingju Yang; Boxian Zhao; Silu Wang; Tomasz Czakiert (Huazhong University of Science and Technology)
15:00 - 15:20	**A117 - *Integrating LLM-Based Literature Mining with Spectroscopy-Driven Machine Learning for Chemical Looping Oxygen Carriers***
	Yushuang Jiang; Zhipeng Li; Hongjian Tang; Lunbo Duan (Southeast University)
15:20 - 15:50	COFFEE BREAK (2nd Floor Foyer Space)
	Session 1-3: Novel Chemical Looping Process - 2 ***Chair: Fanxing Li***
15:50 - 16:10	**A033 - *Selective propylene production through chemical looping oxidative propane dehydrogenation over LiBr modified perovskites***
	Alexander Oing; Felix Donat; Christoph R. Müller (ETH Zürich)
16:10 - 16:30	**A020 - *Chemical looping oxidative dehydrogenation of methanol as a probe for oxygen reactivity***
	Joseph Gebers; Ewa J. Marek (University of Cambridge)
16:30 - 16:50	**A092 - *Methane Dehydroaromatization via Chemical Looping – DHA Catalysis in Tandem***
	Luke Neal; Baitang Jin; Ibrahim Sultan; Md Emdadul Haque; Debangsu Bhattacharyya; John Hu; Isreal Wachs; Fanxing Li (North Carolina State University)
16:50 - 17:10	**A072 - *Potential use of swine manure in chemical looping technologies***
	Yldeney Silva Domingos; Alberto Abad; Margarita de las Obras Loscertales; Teresa Mendiara; Maria Teresa Izquierdo (Instituto de Carboquímica (ICB-CSIC))

9:00 - 9:30	Registration and Coffee (2nd Floor Foyer Space)
9:30 - 10:10	KEYNOTE: Zhenshan Li, Tsinghua University
10:10 - 10:30	COFFEE BREAK (2nd Floor Foyer Space)
	Session 2-1: Chemical Looping Pilot Scale - 2 ***Chair: Arturo Cabello***
10:30 - 10:50	**A040 - *5 MW_{th} chemical looping combustion of natural gas for steam generation and CO_2 separation*** **Yongqi Tong;** Xi Chen; Xianyu Liu; Jinchen Ma; Chaohe Zheng; Ye Tao; Zuwei Xu; Ao Li; Zhongye Li; Xinghe Liu; Deting Luo; Binjie Bai; Xinhua Lai; Yandong Li; Zehua Chen; Weibin Lai; Diwen He; Muming Rao; Xiangbo Zou; Yumeng Chen; Cao Kuang; Zhuihui Hu; Zirong Shen; Binquan Wang; Haibo Zhao (Huazhong University of Science and Technology)
10:50 - 11:10	**A026 - *Pilot Testing and Reactor Modelling of Chemical Looping rWGS: Advantages of Countercurrent over Cocurrent Operation*** **Michiel Van Cauwelaert;** Lukas C. Buelens; Hilde Poelman; Vladimir V. Galvita; Kevin M. Van Geem (Ghent University)
11:10 - 11:30	**A054 - *Comparative Assessment of Hydrocarbon Formation during Chemical Looping Operation with Biomass and Waste at 1 MW_{th} Scale*** **Jochen Strölen;** Philipp Mohn; Fabiola Panitz; Marc Siodlaczek; Bernd Epple (TU Darmstadt)
11:30 – 11:50	**A118 - *System Development of Iron-Based Processes for Energy Production and Storage*** **Magdalena Pauritsch;** Katri Sällilä; Claudia Schütz; Matthias Krall; Michael Lammer; Viktor Hacker (Graz University of Technology)
11:50 - 13:10	LUNCH BREAK (2nd Floor Foyer Space)
	Session 2-2: Chemical Looping Gasification & Reforming - 2 **Chair: Cuiping Wang**
13:10 - 13:30	**A162 – Advancing Biomethanol Production via Chemical Looping Gasification Coupled with Membrane Reactors (Bio-MeGaFuel project)** **Emil Hed**; Amir H. Soleimanisalim; Avikar Saberwal; Jochen Ströhle; Gaetano Anello; Francisco García-Labiano; Ali Hedayati; Jesk Jaeger; Fausto Gallucci; Line Ljungkvist Knøss (RISE Research Institute of Sweden)

13:30 - 13:50	**A013 –** ***Targeted migration mechanisms of nitrogen-containing pollutants during chemical looping co-gasification of coal and microalgae***
	Didi Gai; Danyang Shao; Fengxia An; Zhaoping Zhong; Xiaojia Wang; Lei Chen (Southeast University)
13:50 - 14:10	**A075 -** ***Construction and characteristic of a biomass chemical looping reforming hydrogen production system based on a dual circulating fluidized bed***
	Zhongshun Sun; Bolun Yang; Zhiqiang Wu (Xi'an Jiaotong University)
14:10 - 14:30	**A031 -** ***Experimental study of microalgae Chemical Looping Gasification with ilmenite, LD slag and iron sand in a 1.5 kW_{th} unit***
	Daofeng Mei; Hantao Lu; Francisco García-Labiano; Juan Ignacio Ruiz Irizar; Maria Teresa Izquierdo; Alberto Abad; Guangsuo Yu (Instituto de Carboquimica (ICB-CSIC))
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)

10:10 - 10:30	**COFFEE BREAK (2nd Floor Foyer Space)**
	Session 2-1: Fundamentals of Chemical Looping - 2 *Chair: Luke Neal*
10:30 - 10:50	**A129 - *Determining the oxygen exchange coefficient in $SrFe_{1-x}Co_xO_{3-\delta}$ perovskites for the chemical looping oxidative dehydrogenation of propane to propylene*** **Elena von Mueller;** Felix Donat; Christoph Müller (ETH Zurich)
10:50 - 11:10	**A050 - *New Materials for Enhanced Carbon Capture and Utilisation Process-Thermochemical CO_2-Splitting Systems*** **Muna Zayid Alajmi;** Adam Zaidi; Mauro Luberti; Vincenzo Spallina (University of Manchester)
11:10 - 11:30	**A167 - *Study on Long-term Redox Performance of Cu-based Oxygen Carrier in Chemical Looping Combustion*** **Xiao Zhu -** Laihong Shen (Nanjing University of Industry Technology)
11:30 – 11:50	**A119 - Machine learning generalizable interatomic potentials toward fast atomistic simulations of Cu-based oxygen carriers for chemical looping combustion** **Hongjian Tang;** Zhipeng Li, Lunbo Duan (Southeast University)
11:50 - 13:10	**LUNCH BREAK (2nd Floor Foyer Space)**
	Session 2-2: Reactor and Process Modelling - 1 *Chair: Wenting Hu*
13:10 - 13:30	**A063 – *Modelling of mid-temperature chemical looping methane reforming via binary oxygen carriers in a moving reactor*** **Runxia Cai;** Mingyi Chen; Lizhuang Dou; Mingcheng Li; Binhao Wang; Taixiu Liu; Hongguang Jin; Chongyan Ruan (Shanghai Jiao Tong University)
13:30 - 13:50	**A125 – *Comparative CFD analysis of combustion characteristics and hydrodynamics among different biomass fuels and oxygen carriers for chemical looping combustion*** **Silu Wang;** Xiaobiao Ma; Jing Liu; Yingju Yang; Boxian Zhao; Tomasz Czakiert (Huazhong University of Science and Technology)

13:50 - 14:10	**A015 - *Multiscale CFD simulation of a cold model for 1.5 MW_{th} chemical looping combustion system: Meso-scale drag correction and hydrodynamic stability analysis*** **Wei Wang;** Jinke Du; Fei Li; Weicheng Li; Zhenshan Li (Institute of Process Engineering)
14:10 - 14:30	***A115 - Integrating Steam Methane Reforming with Chemical-Looping Combustion – Full-Scale Design of Fluidized-Bed Heat Exchanger for Reforming*** **Anders Lyngfelt;** Tobias Pröll; Viktor Stenberg (Chalmers University of Technology)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)

10:10 - 10:30	COFFEE BREAK (2nd Floor Foyer Space)
	Session 2-1: Chemical Looping CO_2 Utilisation- 2 *Chair: Adam Zaidi*
10:30 - 10:50	**A165 - *Ni oxidation suppression and low-H_2 reactivation in chemical-looping integrated CO_2 capture-methanation under O_2-containing flue gas*** **Yupeng Feng;** *Stefano Cimino; Fiorella Massa; Michele Emanuele Fortunato; Hairui Yang; Fabrizio Scala; Antonio Coppola* (University of Naples – Federico II)
10:50 - 11:10	**A136 - *Performance assessment of novel Ca/Mn doped perovskite in chemical looping reverse water gas shift process for CO_2 capture and in-situ utilisation*** **Adnan Akhtar;** *Adam Zaidi; Christopher De Leeuwe; Angelos M. Efstathiou; Anam Asghar; Mohamed Hassen-Sayed; Syed Zaheer Abbas (University of Southampton)*
11:10 - 11:30	**A036 - *Modelling of countercurrent chemical looping reactors with non-stoichiometric oxides for reforming and RWGS*** **Brendan Bulfin;** Luke Davenport; Rhushikesh Ghotkar; Janna Martinek; Alon Lidor (University College Cork)
11:30 – 11:50	**A124 - *A Two-Lever Design Rule for High-Entropy Oxide Oxygen Carriers: Minimize Spin Polarization, Maximize Fe–O–Ni Covalency*** **Bo Jin;** Yihan Fan; Haibo Zhao; Natalia Ruban; Vladimir V. Galvita; Zhiwu Liang (Hunan University)
11:50 - 13:10	LUNCH BREAK (2nd Floor Foyer Space)
	Session 2-2: Novel Chemical Looping Process - 3 **Chair: Brendan Bulfin**
13:10 - 13:30	**A006 – *Biomass Chemical Looping Integrated with Direct Reduction of Iron Ore for Carbon-Neutral Ironmaking*** **Ishani Karki Kudva;** Shekhar G Shinde; Krutarth Pandit; Rushikesh K Joshi; Liang-Shih Fan (The Ohio State University)
13:30 - 13:50	**A138 - *High-purity hydrogen production through chemical looping ammonia cracking*** **Siqi Wang;** Ziqi Shen; Mingming Zhu (Cranfield University)

13:50 - 14:10	**A022 - *Photothermal Promotion of Solid-gas Conversion in Chemical Looping Green Hydrogen Storage*** ***Sanli Tang;*** Ying Pan; Qibin Liu; Hongguang Jin (Institute of Engineering Thermophysics, Chinese Academy of Sciences)
14:10 - 14:30	**A019 - *Chemical Looping Compressed Air Energy Storage*** **Abu Kasim;** Ewa Marek (University of Cambridge)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)

10:10 - 10:30	**COFFEE BREAK (2nd Floor Foyer Space)**
	Session 2-1: Chemical Looping Combustion - 3 ***Chair: Henrik Leon***
10:30 - 10:50	**A037 - *Performance Evaluation of Volcanic Iron-Based Badar Stone in Fluidized Bed Chemical Looping Combustion with Cu, Co, and Mn Doping*** **Azaria Haykal Ahmad;** Victor Purnomo; Henrik Leion; Muhammad Aziz (The University of Tokyo) ;
10:50 - 11:10	**A053 - *Flexible CFB-CLC operation strategy for biofuels combustion with negative CO_2 emissions*** **Amirhossein Filsouf;** Luis F. de Diego; Maria Teresa Izquierdo; Alberto Abad; Francisco García-Labiano (Instituto de Carboquímica (ICB-CSIC))
11:10 - 11:30	**A061 - *Reacting multiphase numerical simulation of a 150 kW chemical looping combustion (CLC) fuel reactor with biomass as fuel*** **Josh Dowdell;** Enrica Masi; Olivier Simonin; Liyan Sun; Øyvind Langørgen; Inge Saanum; Nils Erland L. Haugen (SINTEF Energy Research)
11:30 – 11:50	**A088 - *Reactor-Scale Modeling and Mechanistic Analysis of the Fuel Reactor in a 5 MW_{th} Chemical Looping Combustion Unit*** ***Yang Wang;*** Dan Li; Jiaye Li; Zhenshan Li (Tsinghua University)
11:50 - 13:10	**LUNCH BREAK (2nd Floor Foyer Space)**
	Session 2-2: Materials for Chemical Looping- 3 **Chair: Zuoan Li**
13:10 - 13:30	***A086 – Elemental Interactions in Biochar Ash and Their Effects on Nitrogen Carriers in Chemical Looping Ammonia Synthesis*** **Fan Wang;** Xingyuan Cheng; Meng Zhang; Rui Liu; Ye Wu (Nanjing University of Science and Technology)
13:30 - 13:50	***A086 – Performance of Li_4SiO_4 Sorbents for High-Temperature CO_2 Capture in Dual Interconnected Fluidized Bed Reactors*** **Fabrizio Scala;** Antonio Coppola; Fiorella Massa; Monica Puccini; Eleonora Stefanelli (STEMS CNR)

13:50 - 14:10	**A034 - *The chemical journey of a CLC oxygne carrier: from dawn to dust*** **Virgile Rouchon;** Arnold Lambert; David Chiche; Anne-Sophie Gay; Christèle Legens; Anne-Lise Taleb; Paul Hazemann; Souad Rafik-Clément; Ovidiu Ersen; Stefan Stanescu; Valérie Briois; Sharmin Sharna (IFP Energies nouvelles)
14:10 - 14:30	**A103 - *Dual function of oxygen carrier in OCAC process*** **Lu Chen;** Dennis Lu (Southeast University)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)

9:00 - 9:30	Registration and Coffee (2nd Floor Foyer Space)
9:30 - 10:10	KEYNOTE: Mercedes Maroto-Valer, IDRIC
10:10 - 10:30	COFFEE BREAK (2nd Floor Foyer Space)
	Session 3-1: Chemical Looping Combustion - 4 *Chair: Felix Donat*
10:30 - 10:50	**A002 - *A Lifetime Index for Evaluating Oxygen Carriers in Chemical Looping Combustion*** **Zhenwu Miao,** Shixuan Shen; Zhenshan Li; Jinxia Quan; Laihong Shen (Southeast University)
10:50 - 11:10	**A154 - *Reduced alkali exposure in the air reactor of Bio-CLC and its implications for high-temperature corrosion mitigation and plant efficiency*** **Xiaoyun Li;** Nasrin Nemati; Hooman Karimi Abadeh; Emil Hed; Magnus Ryden; Jesper Liske; Sennai Mesfun; Amir H. Soleimanisalim; Hans Larsson; Tobias Mattisson (Chalmers University of Technology)
11:10 - 11:30	**A113 - *Investigation of key reactions in Chemical Looping Combustion with biomass: pyrolysis, gasification and volatiles-oxygen carrier interactions*** **Paul Hazemann;** Eddy Moreno-Roman; Nicolas Vin; Patrice Font (IFP Energies Nouvelles)
11:30 – 11:50	**A099 - *Cold model test and CFD simulation of 20 MW CLC reactors*** **Jiaye Li;** Hao Wang; Yang Wang; Yunshu Ye; Maojun Zou; Haojie Xie; Ziquan Yan; Xinglei Liu; Zhenshan Li (Tsinghua University)
11:50 - 13:10	LUNCH BREAK (2nd Floor Foyer Space)
	Session 3-2: Novel Chemical Looping Process - 4 *Chair: Christopher de Leeuwe*
13:10 - 13:30	**A095 – *Non-Thermal Plasma-Assisted Chemical Looping Ammonia Synthesis from N_2/H_2O over Manganese-Based Materials*** **Weikai Shi;** Hao Liu; Yaoyao Zheng (University of Nottingham)
13:30 - 13:50	**A085 - *N_2-free CO production from CO_2 and NH_3 through chemical looping in a dual countercurrent moving bed reactor with $Ru/La_{0.75}Sr_{0.25}Cr_{0.25}Mn_{0.75}O_{3-\delta}$*** **Martin Keller;** Abu Farhan Bin Abu Kasim; Ewa Marek (National Institute of Advanced Industrial Science and Technology (AIST))

13:50 - 14:10	**A011 - *A Novel Fixed Bed Chemical Looping System for Continuous Conversion of Natural Gas to Hydrogen with Complete CO_2 Capture: A Comprehensive Experimental and Modeling Study*** **Tanay A. Jawdekar;** Falguni Akulwar; Xiaofeng Jiang; Medha Otageri; Qiaochu Zhang; Liang-Shih Fan (The Ohio State University)
14:10 - 14:30	**A059 - *Reverse Chemical-Looping Biomass Gasification: A Deoxygenation-Driven Pathway for Syngas Upgrading*** **Zhao Sun;** Nicholas F. Dummer; Zhiqiang Sun; Graham J. Hutchings (Central South University)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)
15:00 - 16:00	*Plenary Discussion at Lecture Theatre A (LT-A)*
18:00 - 23:00	SOCIAL DINNER

10:10 - 10:30	COFFEE BREAK (2nd Floor Foyer Space)
	Session 3-1: Calcium Looping - 2 *Chair: Daofeng Mei*
10:30 - 10:50	**A203 - *Investigations on Biomass Gasification of Compact Fast Dual Fluidized Bed Calcium Looping – From Kilowatt to Megawatt Scale*** **Xiaohan Chen;** Fangjun Wang, Shiyi Chen, Wenguo Xiang (Southeast University)
10:50 - 11:10	**A087 - Torrefaction-Enhanced Biomass Chemical Looping Gasification via a Calcium-Based Hydration Cycle** **Tingwei Wang,** Nanjuan Duan; Yijie Yang; Zhao Sun; Zhiqiang Sun; Graham J. Hutchings (Central South University)
11:10 - 11:30	**A206 - *Process Simulation of Fluidized Bed SE-SMR with In-Situ CO_2 Capture by CaO: An Aspen Plus Study*** **Roberto Ruggiero,** Fiorella Massa, Antonio Coppola, Fabrizio Scala (University of Naples- Federico II)
11:30 – 11:50	**A133 - *Pilot-Scale demonstration of the CASOH process for CO_2 Capture from Blast Furnace Gas*** **Jose Ramon Fernandez;** Monica Alonso; Roberto Garcia; Alberto Mendez; Marcos Cano; Carlos Abanades (CSIC - INCAR)
11:50 - 13:10	LUNCH BREAK (2nd Floor Foyer Space)
	Session 3-2: Reactor and Process Modelling - 2 *Chair: Jasmin Kemper*
13:10 - 13:30	**A046 - *Dynamics-Informed Techno-Economic Assessment of Fixed Bed Chemical Looping for Emissions Reduction and Energy Recovery in the Electric Arc Furnace*** **Andrew Furlong;** Nicole K. Bond; Mohammad Asiri; Michael J. Pegg; Jan B. Haelssig; Robin W. Hughes (Dalhousie University)
13:30 - 13:50	**A032 – *Advancing high-efficiency CHP with negative emissions: A comparative study of Chemical Looping Combustion and post-combustion capture*** **Emil Hed;** Sennai Mesfun; Amir H. Soleimanisalim; Hans Larsson (Research Institutes of Sweden)

13:50 - 14:10	**A047 - Techno-Economic Analysis of Chemical Looping Fuel Production** **Alon Lidor;** Akbar Laksana; Phalgun Malupillai; Rhushikesh Ghotkar; Janna Martinek; Brendan Bulfin; Kurt Van Allsburg (National Laboratory of the Rockies)
14:10 - 14:30	**A048 - *Chemical Looping Process Design Considerations for Natural Gas Fuel*** **Scott Champagne,** Amanda Alain (Natural Resources Canada)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)

10:10 - 10:30	**COFFEE BREAK (2nd Floor Foyer Space)**
	Session 3-1: Fundamentals of Chemical Looping - 3 *Chair: Bernd Epple*
10:30 - 10:50	**A007 - *Redox to synthesize Ni-Cu alloy for CaO-based bifunctional catalyst boosting reverse water-gas shift reaction in fluidized bed*** **Xinyue Su;** *Laihong Shen (Southeast University)*
10:50 - 11:10	**A052 - *Conventional and Chemical-Looping Dry Methane Reforming over Ni-Zeolite Catalysts*** **Shaymaa Majeed;** Begum Tokay; Fatih Güleç (University of Nottingham)
11:10 - 11:30	**A168 - *Carbon deposition behavior in carbonate hydrogenation over limestone*** **Caili Li;** Chun Zhu; Dennis Lu; Zhenkun Sun; Hongjian Tang; Lunbo Duan (Southeast University)
11:30 – 11:50	**A064 - *Ultra-Lean Methane as a Kinetic Promoter of Early Oxidation in Fe-Based Oxygen Carriers*** **Xinjiang Dong;** Fang Liu; Li Yang (China University of Mining and Technology)
11:50 - 13:10	**LUNCH BREAK (2nd Floor Foyer Space)**
	Session 3-2: Chemical Looping Gasification & Reforming - 3 *Chair: Zaheer Syed Abbas*
13:10 - 13:30	**A016 - *Oxygen carrier aided gasification of wood pellets at 1 MW_{th} scale in comparison with chemical looping gasification*** **Marc Siodlaczek;** Mohammad Shahrivar; Falko Marx; Jochen Ströhle; Bernd Epple (Technical University of Darmstadt)
13:30 - 13:50	**A056 – *Solid Biofuel Chemical Looping Gasification Using Bi-functionalised Fe-Based Oxygen Carriers*** **Maryam Awode;** Begum Tokay; Colin E Snape; Fatih Güleç (Institution University of Nottingham)
13:50 - 14:10	**A042 -*Techno-Economic and Life Cycle Assesment of Gas Switching Reforming-Based CO_2 and H_2 Utilization Pathways for Sustainable Aviation Fuel and Urea Production*** ***Carlos Reynoso*;** Poonam Kamlekar; Shahriar Amini (The University of Alabama)

14:10 - 14:30	**A024 – *Construction of Hollow Red Mud-Based Perovskite Oxygen Carriers via Water Glass Templating for Efficient Chemical Looping Gasification of Sewage Sludge*** **Kun Wang;** Ziyang Li; Cuiping Wang (Shandong University of Science and Technology)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)

	Session 3-1: Chemical Looping Reactor Design *Chair: Srinivas Krishnaswamy*
10:30 - 10:50	**A122 - *Design and optimization of a Sorption Enhanced-Chemical Looping Reforming (SE-CLR) system for hydrogen production with inherent CO_2 capture*** **Alberto Abad;** J. González-Torrijo; Margarita de las Obras Loscertales; Teresa Mendiara (Instituto de Carboquimica (ICB-CSIC))
10:50 - 11:10	**A089 - *Research on the Fluidization Performance and Mixing Uniformity of Binary Particles for Chemical looping Ammonia Synthesis*** **Meng Zhang;** Rui Liu; Ye Wu; Dong Liu (Nanjing University of Science and Technology)
11:10 - 11:30	**A106 - *Operability window in packed-bed chemical looping reactors: influence of oxygen carrier metal loading on heat and reaction front dynamics*** **Isabel Pazmino-Mayorga;** Andrew D. Wright; Vincenzo Spallina (University of Manchester)
11:30 – 11:50	**A074 - *Surrogate-Based Optimization of Operating Cycles for Packed-Bed Chemical Looping Reforming*** **Vladislav Zurba;** Vincenzo Spallina (University of Manchester)
11:50 - 13:10	**LUNCH BREAK (2nd Floor Foyer Space)**
	Session 3-2: Chemical Looping Water Splitting - 2 *Chair: Nader Mahinpey*
13:10 - 13:30	**A043 - *Multi-Scale Kinetics of High-Purity Hydrogen Production of Ni-doped $Ca_2Fe_2O_5$ oxygen carrier*** **Chaohe Zheng;** Panlei Wang; Qingshan Zeng; Mingze Su; Haibo Zhao (Huazhong University of Science and Technology)
13:30 - 13:50	**A018 - Experimental investigation of chemical looping ammonia cracking with waste iron oxygen carriers** **Orlando Palone;** Adam Zaidi; Hassan Alhassawi; Aya Sandid; Domenico Borello; Vincenzo Spallina (Sapienza University of Rome)



13:50 - 14:10	**A201 - *Data-driven design of high-entropy oxygen carriers for chemical looping hydrogen production***
	Tingting Xu; Tao Ma, Dong Liu (Nanjing University of Science and Technology)
14:10 - 14:30	**A149 - *Oxygen Transport and Phase-Dependent Redox Behaviour in Iron Oxides for Chemical Looping Hydrogen Production***
	Radhey Shyam Yadav; Ivana Staničić; Alfred Juhlin Onbeck; Anders Hellman; Magnus Rydén; Tobias Mattisson (Chalmers University of Technology)
14:30 - 15:00	COFFEE BREAK (2nd Floor Foyer Space)



04 September

Room: 2B.026

	WORKSHOP: "Early Career Session"
09:30	***Panel on Research careers: opportunities and challenges***
	10 min **Various career journeys**
	Sharing sessions by panellists on key career decisions, opportunities, and setbacks, and the timelines of their careers from post-PhD onwards.
	20 min ***Discussion***
	Short panel discussion covering broader career development: building a profile, collaborations, networking, finding your niche, balancing research directions, etc. Questions from the audience
10:10 - 10:40	**Speed Mentoring**
	Mentors distributed across tables. Participants rotate every ~4 minutes for short one-to-one conversations
	COFFEE BREAK
11:00	***Focus Panels: Future of Chemical Looping***
11:00 - 11:20	***Focus Panel 1: Chemical Looping and AI***
	The use of AI for material discovery, modelling, optimisation and data-driven research.
	Speakers Santiago Zapata Boada + questions
11:20 - 11:40	***Focus Panel 2: New Measurement Techniques to Advance Chemical Looping Studies***
	Operando techniques, advanced characterisation, imaging, spectroscopy, synchrotron or neutron techniques, etc.
	Speakers Wenting Hu + questions
11:40 - 12:00	***Focus Panel 3: Future Reactor Designs in Chemical Looping***
	Beyond packed beds and fluidised beds: plasma, moving beds, counter-current designs, photocatalytic effects, etc.
	Speaker Yaoyao Zheng, Martin Keller + questions
12:00	**Active session: What is your next great paper?**
	Tackling Key Challenges in Chemical Looping through collaborative research
12:00 – 12:05	*Group work introduction and challenge allocations (size of groups depends on the number of signups)*



12:05 - 12:20	**What do we gain by working together?** *Groups work on identifying strengths and gaps, approaches to tackle the allocated challenge question*
12:20 - 12:30	**How to structure your work for straightforward publication?** *Pitfalls and tips in publishing research papers (papers, narrative, figures)* *Speakers: Editors from journals (Ewa Marek)*
12:30 - 12:40	**Closing: The 5-Year Challenge** *Each group shares its top research question and one key career takeaway; brief final reflections.*

Room: 2B.025

	WORKSHOP: **"From Idea to commercialization with Horizon Europe projects"**
09:30 - 10:00	**Welcome and Coordinating an EU project** *Vincenzo Spallina, University of Manchester	**COUPLED***
10:00 - 10:30	**How to accelerate Impact** *Coline Perrin, PNO Innovation	**COUPLED***
	COFFEE BREAK
11:00 - 11:45	**From material discovery to demonstration scale** *Francisco Garcia Labiano & Jochen Ströhle, CSIC & TUDA	**Bio-MeGaFuel & Bio-FlexCLC***
11:45 - 12:15	**Moving idea into a spinout** *Fausto Gallucci, 1CUBE & ZEFIRA	**COUPLED, Bio-MeGaFuel & Bio-FlexCLC***
12:15 - 12:30	**Discussion and Closure**

P01/ A12: Yan Lin (Guangzhou Institute of Energy Research, Chinese Academy of Sciences)

Title: *High-entropy modification of Ni-Fe spinel oxygen carriers in chemical looping hydrogen production*

P02/ A030: Zhen Huang (Guangzhou Institute of Energy Research, Chinese Academy of Sciences)

Title: *Controlled Syngas Production via In-Situ Hydrogen Supplementation in Biomass Chemical Looping Gasification*

P03/ A028: Mohammad Mozahar Hossain (King Fahd University of Petroleum & Minerals)

Title: *Intrinsic Activity of Fe_2O_3/Al_2O_3 Oxygen Carrier for Enhanced CO_2 Conversion in Chemical Looping RWGS*

P04/ A097: Chenheng Zhangsun (Huazhong University of Science and Technology)

Title: Calcium Looping for Solar Thermochemical Energy Storage: Material Stability Challenges and Optimization Strategies

P05/ A104: Anna Dudnik (University of Nottingham)

Title: Can Cu-based oxygen carriers enable fast, stable CLOU combustion of diverse solid biofuels?

P06/ A212: Weibiao Wang (Huazhong University of Science and Technology)

Title: B-site Ni-doping and MgO/TiO_2 modified $CaMnO_{3-\delta}$ for thermal energy storage

P07/ A144: Juan A. C. Ruiz (SENAI Innovation Institute for Renewable Energies, ISI-ER)

Title: Role of Cerium Incorporation in the Development of Nickel-Based Oxygen Carriers for Chemical Looping Combustion

P08/ A163: Emil Hed (RISE Research Institutes of Sweden)

Title: Flexible Chemical Looping Combustion for Combined Heat and Power with Negative Emissions (Bio-FlexCLC project)

P09/ A102: Daofeng Mei (Instituto de Carboquímica ICB-CSIC))

Title: A cradle-to-grave lifecycle assessment of bio-kerosene production from microalgae chemical looping gasification

P10/ A158: Srinivas Krishnaswamy (BITS Pilani K K Birla Goa Campus)

Title: Chemical Looping CO oxidation in a packed bed reactor: An alternative to conventional energy-intensive CO_2 capture processes

P11/ A131: Kexin Li (Central South University)

Title: Oxygen vacancy engineering of $CaMn_{0.375}Ti_{0.375}Mg_{0.125}Fe_{0.125}O_3$ perovskite oxygen carrier for enhanced volatile combustion in chemical looping

P12/ A039: Yongqi Tong (Huazhong University of Science and Technology)

Title: Numerically investigating the unsteady-state characteristics in a 50 MW_{th} chemical looping combustion reactor

P13/ A038: Yongqi Tong (Huazhong University of Science and Technology)

Title: CPFD Simulation Study on a Megawatt-Scale Cold-Model Chemical Looping Combustion Unit

P14/ A121: Alberto Abad (Instituto de Carboquímica, ICB-CSIC))

Title: Techno-economic and life cycle assessment of hydrogen production with negative CO_2 emissions via Sorption Enhanced-Chemical Looping Reforming

P15/ A084: Martin Keller (National Institute of Advanced Industrial Science and Technology, Japan)

Title: Catalytic effects of Ru on chemical looping ammonia cracking using $La_{0.75}Sr_{0.25}Cr_{0.25}Mn_{0.75}O_{3-\delta}$ perovskite

P16/ A145: Giovanny S. Oliveira (SENAI Innovation Institute for Renewable Energies, ISI-ER)

Title: Solar Chemical Looping – A systematic review of potential applications for Brazil

P17/ A101: Song Chen (Tsinghua University)

Title: Online measurement of OC mass loss due to redox induced particle fragmentation

P18/ A111: Song Chen (Tsinghua University)

Title: Scalable Production of Perovskite Oxygen Carriers Using Ilmenite Fines from a 5MW_{th} CLC Pilot Unit

P19/ A112: Tara Torabi (University of Manchester)

Title: Hybrid Dynamic Modelling for the Optimization of a Packed-Bed Chemical Looping Reforming System

P20/ A137: Ramesha Tariq (University of Manchester)

Title: Sorption-Enhanced Chemical Looping Reforming of Methane in a Single Fluidised Bed Reactor: Process Concept, Reactor Design and Modelling Framework

P21/ A035: Santiago Zapata (University of Manchester)

Title: Process modelling and Simulation of Integrated Chemical Looping RWGS-Fischer-Tropsch System for Renewable Liquid Fuel Production

P22/ A161: Panagiotis Boutikos (University of Patras)

Title: Theoretical investigation of sorption-enhanced CO_2 methanation in a fluidized-bed membrane reactor

P23/ A210: Alfonso Guerra (Escuela Superior Politécnica del Litoral)

Title: Integrated Utilization of Petroleum Associated Gas: Early-Stage Techno-Economic Assessment of Alternatives to Flaring

P24/ A211: Fan Wu (Southeast University)

Title: Sr and Fe Co-doped $CaMnO_3$ Perovskites as Reversible Oxygen Carriers for Chemical Looping Applications

P25/ A017: Lek Hong Lim (Cambridge Centre for Advanced Research and Education in Singapore)

Title: Automating Techno-economic Assessments for Chemical Looping Technologies

P26/ A062: Zuzanna Ewa Kosobudzka (University of Cambridge)

Title: Reducing Hydrogen Demand in the Production of Sustainable Aviation Fuels via Integrated Chemical Looping and Waste Propane Valorisation

P27/ A021: Joseph Gebers (University of Cambridge)

Title: Influence of Ag on the ordering of oxygen vacancies and redox behaviour in $SrFeO_{3-\delta}$ for selective chemical looping catalysis

P28/ A014: Amol Deshpande (BITS Pilani K K Birla Goa Campus)

Title: A novel chemical looping (unmixed) combustion system for heating thermic fluids: Modeling and simulation

P29/ A132: Jose Ramon Fernandez (CSIC-INCAR)

Title: New CO_2 capture process based on Calcium Looping for High-Purity CO_2 Production

P30/ A045: Andrew Furlong (Dalhousie University)

Title: Fixed Bed Chemical Looping Reactors for Fluidized Chemical Looping Fuel Reactor Gas Polishing

P31/ A025: Michiel Van Cauwelaert (Ghent University)

Title: Pilot-Scale Assessment of Fe_2O_3-$MgAl_2O_4$ Extrudates in Chemical Looping Reverse Water-Gas Shift: Performance and Structural Stability

P32/ A044: Chaohe Zheng (Huazhong University of Science and Technology)

Title: Measuring and Modeling the Char Conversion Rate in Coal-Derived Chemical Looping with Oxygen Uncoupling

P33/ A078: Arturo Cabello (Instituto de Carboquímica ICB-CSIC))

Title: Preliminary Screening of Dual Functional Materials for the Integrated Carbon Capture by CO_2 Chemical Looping and Sorption-Enhanced Methanation (ICC-SEM) process

P34/ A091: William Martin (North Carolina State University)

Title: Chemical Looping-Oxidative Dehydrogenation for Olefin Production: Modeling and Economics

P35/ A070: Zuoan Li (SINTEF Industry)

Title: Perovskite-based redox catalysts for chemical looping oxidative coupling of methane for ethylene production

P36/ A123: Mingjia Zhang (University of Nottingham)

Title: Plasma-assisted catalysis with Chemical Looping for methane removal at mild temperatures

P37/ A146: Fatih Gulec (University of Nottingham)

Title: Biomass Chemical Looping in the UK: The Promise, The Pressure, and The Priority (University of Nottingham)

P38/ A148: Fatih Gulec (University of Nottingham)

Title: Chemical Looping Combustion as a Promising Integrated Technology for Net-Zero Refineries (University of Nottingham)

P39/ A135: Adnan Akhtar (University of Southampton)

Title: Investigating reduction kinetics of novel Ca/Mn-doped perovskite in chemical looping with machine learning based validation

P40/ A140: Fausto Gallucci (1 CUBE B.V.)

Title: BioMegaFuel project – Chemical looping gasification and membrane reactor

P41/ A141: Simona Scoppa (1 CUBE B.V.)

Title: Bio-FlexCLC project – Flexible CLC for CHP applications

P42/ A213: Sonia Pasacane (University of Naples Federico II)

Title: Sorption-Enhanced Steam Methane Reforming in Fluidized Bed Reactors: Literature Review and Research Outlook

P43/ A215: Yingjie Mi (Huazhong University of Science and Technology)

Title: Migration of Calcium in biomass ash in oxygen carrier aided combustion

P44/ A216: Tomonao Saito (Japan Carbon Frontier Organization)

Title: Development of Chemical Looping Biomass Combustion Poly-generation Technology in Japan

P45/ A217: Joaquín Andrés Vásquez (Chalmers University of Technology)

Title: Multiscale Framework for the mechanical degradation of perovskite oxygen carriers in Chemical Looping: linking quantum descriptors to fluidized bed attrition

P46/ A218: Lei Yang/Yifan Wang (Hyloop Tech. (Beijing) Co., Ltd.)

Title: A Self-Heating-Coupled Fixed-Bed System for Chemical Looping Hydrogen Production

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CO2UPLED

Reaching net-zero emissions will require major changes across the entire energy system. Carbon Capture, Utilisation and Storage (CCUS) will play a central role, providing nearly 20% of the global emissions reductions needed by 2050.
In Europe, the Industrial Carbon Management Strategy foresees over 450 million tonnes of CO_2 captured yearly, with almost half reused to make low-carbon products. EU initiatives such as the Green Deal, REPowerEU and the Net-Zero Industry Act support this transition by boosting renewable energy, diversifying energy supply and encouraging industries to develop large demonstration plants for CO_2-based fuels. These measures aim to strengthen energy security, enable climate neutrality by 2050, and scale up sustainable fuels for aviation and maritime transport.
Because climate targets are urgent, a diverse set of CO_2 capture and utilization technologies must be tested in real industrial conditions to identify the most efficient pathways.
COUPLED responds to this challenge by demonstrating, at TRL7, an integrated process that produces cost-effective renewable fuels using green hydrogen, biogas, recycled CO_2 and low-quality waste gases. Building on more than a decade of research in chemical looping, membrane separation and process intensification, COUPLED will showcase three complementary technologies covering the full value chain, from biogenic and non-biogenic CO_2 to sustainable fuels.

Coordinated by The University of Manchester, COUPLED unites a powerful consortium of Europe's leading industrial players and technology innovators. The partnership brings together FINOCAS, SOCAR, CONTARINA and SNAM, alongside catalyst and process leaders Johnson Matthey and WOOD, engineering specialists TECHFEM, and component manufacturers IMI, HELICAL and ZEFIRA. Research excellence is ensured by The University of Manchester and TECNALIA, who contribute essential intellectual property and scientific leadership. The consortium is further supported by PNO, ETAM and INNSIGHT for business development, sustainability assessment and stakeholder engagement across the hydrogen, CCUS and biofuel ecosystems.

PNO INNOVATION

PNO INNOVATION, established in 1984, is a European group, made up of a pool of more than 500 professionals across 10 Member States.
Every year, PNO supports more than 3.000 clients in their R&D processes, realizing original data-driven and expert-driven analysis and creating over 300 cutting-edge R&D projects – changing the world for the better. PNO INNOVATION has drafted and successfully executed dissemination and exploitation plans of a great number of European projects in various sectors.

In COUPLED project, PNO INNOVATION is represented by the Italian branch, specialized in R&D Advisory, Innovation Management and funding procurement, providing consultancy services to private and public organizations.

HIDEN ANALYTICAL

Hiden Analytical designs and manufactures quadrupole mass spectrometry systems for advanced research and specialist process monitoring.

Their instrumentation enables precise, real-time gas and vapour analysis, supporting reaction monitoring, catalyst and materials studies, and process optimisation in laboratory and pilot-scale environments, helping advance low-carbon energy and chemical production.



HELICAL ENTERPRISES

Helical Enterprises is a UK engineering company specialising in the design and development of innovative energy and process systems, with a particular focus on taking new emerging technologies from concept through to pilot and demonstrator scale.
We work with universities, technology developers, cleantech start-ups and industrial partners to turn promising ideas into practical, engineered systems. Our expertise spans thermal and process engineering, high temperature and high pressure systems, heat transfer, hydrogen and low-carbon technologies, mechanical design, test rigs and bespoke pilot plant. We are particularly experienced in projects where conventional engineering must be combined with bespoke novel technology, demanding operating conditions and the requirements of grant-funded research and demonstration programmes.

Helical can support projects from early feasibility and concept development through detailed engineering, manufacture installation and commissioning. Our recent project experiences include chemical looping, calcium looping for CCS, DAC, blue hydrogen and heat recovery pilot plans.
Our approach is practical and collaborative where we focus on the engineering needed to build, operate and demonstrate new technology. This makes Helical an effective bridge between research, technology development and commercial deployment.

Across the rapidly evolving clean-energy sector—from hydrogen and carbon capture to heat recovery systems—our aim is straightforward: bridge the gap between research and commercial deployment by turning promising technologies into proven, scalable engineering systems.


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