# 2nd International Chain Elongation Conference - Program

## Wednesday, November 2nd / Start of the Conference

**13:00 - 14:00** Lunch

**14:00 - 14:30** Opening

Keynote I

**Prof. Dr. Ir. Lars T. Angenent, University of Tübingen**

**14:30 - 15:50** Bioreactor Engineering and Bioprocess Development

Session I

I: **Bin Liu**, **Helmholtz Centre for Environmental Research – UFZ**
Sträuber, H; Centler, F; da Rocha, UN; Kleinsteuber, S:

*Functional Redundancy secures Resilience of Chain Elongation Communities upon pH shifts in closed Bioreactor Ecosystems.*

II: **Maximilienne Allart, Delft University of Technology**
Fox, BB; Nettersheim, IHMS; Sousa, DZ; Kleerebezem, R**:**

*Controlling the Product Spectrum of chain-elongating Microbial Communities: Direct Conversion of Ethanol to Hexanoate.*

III: **Myrsini Sakarika, Ghent University**
Regueira, A; Rabaey, K; Ganigué, R:

*Thermophilic Caproic Acid Production from Grass Juice by sugar-based Chain Elongation***.**

IV: **Han Wang, University of Tübingen**
Jeon, BS; Ortiz-Ardila, AE; Schweizer, P; Angenent, LT:

*Steering the Chain-Elongating Microbiome to specific Medium-Chain Carboxylic Acids with Ethanol and Lactate as co-Electron Donors.*

**15:50 - 16:50** Poster session

**16:50 - 17:20** Keynote II

**Ass. Prof. Dr. Matthew Scarborough, University of Vermont**

**17:20 - 18:00** Biorefinery Development & Integration in Circular Economy

Session I

I: **Virginia Montiel-Corona, National Autonomous University of Mexico**
Buitròn, G:

*Effect of light/dark cycles on Polyhydroxyalkanoates and 5-aminolevulinic acid Production by Photofermentation using Medium-Chain Carboxylic Acids as Substrate.*

II: **Wanqin Zhang, Chinese Academy of Agricultural Sciences**

Wang, S; Yin, F; Cao, Q; Lian, T; Zhang, H; Zhu, Z.; Dong, H:

*Medium-Chain Carboxylates Production from co-Fermentation of Swine Manure and Corn Stalk Silage via Lactic Acid.*

**18:00 - 19:00** Dinner

**19:00 – 23:30** Social program

## Thursday, November 3rd

**07:00 - 08:00** Breakfast

**08:00 - 08:30** Keynote III

**Dr. Heike Sträuber, Helmholtz Centre for Environmental Research – UFZ**

**08:30 - 09:30** Microbial Physiology, Pathways, Informatics, and Genetics

Session I

I: **Filip Brodowski, Poznan University of Technology**
Lezyk, M; Gutowska, N; Duber, A; Oleskowicz-Popiel, P:

*Competition between Lactate-based and Ethanol-based Chain Elongation: the Influence of pH on Product Selectivity and Microbiome Structure.*

II:**Kasper de Leeuw, Wageningen University**
Hiemstra, I; Kocks, J; de Leeuw, K; de Wilde, V; Zamudio Pineres, J; Buisman, C; Strik D:

*Applying Raman Spectroscopy to monitor Chain Elongation Metabolites*.

III: **Kurt Gemeinhardt, University of Tübingen**
Jeon, BS; Ntihuga, JN; Usack, JG; Angenent, LT:

*Effect of Oxygen Availability on n-Caprylate Production from Ethanol and Acetate.*

**09:30 - 10:00** Keynote IV

**Ass. Prof. Dr. Xiaoyu Zhu, Chinese Academy of Sciences**

**10:00 - 10:10** Opinion piece I

**Prof. Dr. Ramon Ganigué, Ghent University**

**10:10 - 10:40** Keynote V

**Prof. Dr. Byoung-In Sang, Hanyang University**

**10:40 - 11:00** Coffee break (Café Heuss)

**11:00 - 12:00** Microbial Physiology, Pathways, Informatics, and Genetics

Session II

I: **Alexander Mook, University of Ulm**
Bengelsdorf, FR:

*Lactate-mediated co-Cultivation of A. woodii and C. drakei for Production of Medium-Chain Organic Acids.*

II: **Barbara Ulcar, Ghent University**
Regueira, A; Boon, N; Ganigué, R:

*Unravelling Metabolic Interactions and Ecological Strategies of members of Sugar Chain-Elongating Community*.

III: **Ivette Parera Olm, Wageningen University**
Dubaere, C; Sousa, DZ:

*Ethanol-based Chain Elongation via Syngas Fermentation using synthetic microbial co-Cultures.*

**12:00 - 13:00** Lunch

**13:00 - 14:00** Poster session

**14:00 - 14:10** Opinion piece II

**Prof. Dr. Ir. Cees Buisman, Wageningen University**

**14:10 - 14:40** Keynote VI

**Ass. Prof. Dr. Anca Delgado, Arizona State University**

**14:40 - 15:40** Biorefinery Development & Integration in Circular Economy

Session II

I: **Kevin Myers, University of Wisconsin-Madison**
Fortney, NW; Ingle, AT; Walters, KA; Scarborough, MJ; Donohue, TJ; Noguera, DR:

*Comparison of Metagenomes from Fermentation of various Agroindustrial Residues.*

II: **Juan Castilla-Archilla, National University of Ireland**
Zeng, D; Zhang, Y; Lens, P:

*Continuous Volatile Fatty Acid Production and Recovery using an Electrochemical Cell System coupled to a High-Rate Reactor.*

III: **Y. Lith, Wageningen University**
Chen, WS; Strik, D:

*Techno-Economic-Environmental Analysis of a basic Chain Elongation Factory: featuring Perspectives to expand Application Potential.*

**15:40 - 16:00** Coffee break (Restaurant Symposium)

**16:00 - 16:30** Keynote VII

**Dr. Juan Guzman, Capro-X Inc.**

**16:30 – 17:10** Microbial Physiology, Pathways, Informatics, and Genetics

Session III

I: **Kevin Sabbe, Ghent University**
Ganigué, R; Boon, N:

*Monitoring Chain Elongation: from Flow Cytometric Fingerprint to predicting Process Performance.*

II: **Seongcheol Kang, Hanyang University**
Pranav, SN; Kim, HJ; Jeon, BS; Sang, BI:

*Selective Caprylate Production by Megasphaera hexanoica along with Metabolomic Analysis.*

**17:10 - 18:00** Poster session

**18:00 - 19:00** Dinner

**19:00 - 23:30** Social program

## Friday, November 4th / End of the conference

**07:00 - 08:00** Breakfast

**08:00 - 08:30** Keynote VIII

**Niels van Stralen, ChainCraft B.V.**

**08:30 - 09:50** Biorefinery development & integration in Circular Economy

Session III

I: **Isaac Owusu-Agyeman, KTH-Royal Institute of Technology**
Plaza, E; Cetecioglu, Z:

*Production of Medium-Chain Fatty Acids from Sewage Sludge and Food Waste without exogenous Electron Donor.*

II: **Kevin Walters, University of Wisconsin-Madison**
Mohan, G; Myers, KS; Donohue, TJ; Noguera, DR:

*A genome-level Analysis of the temporal Dynamics of a Dairy-Residue-Fermenting Microbial Community.*

III: **Sharon Villegas-Rodríguez, National Autonomous University of Mexico**
Buitrón, G:

*Production and in-situ Extraction of MCCA at laboratory scale using Winery Effluents as Substrate and Inoculum.*

IV: **Richard Hegner, University of Tübingen**
Hegner, R; Temovska, M; Ghodadara, M; Jäger, B; Ahmed, AK; Angenent, LT:

*n-Caproate Production from Acid Whey using a two-stage temperature-controlled Biorefinery: Bioprocess Optimization and Economic Potential.*

**09:50 - 10:20** Keynote IX

**Shivani Garg, LanzaTech Inc.**

**10:20 -10:50** Keynote X

**Kirsten Herben-Steinbusch, DAB.bio**

**10:50 - 11:00** Coffee break (Café Heuss)

**11:00 - 12:00** Bioreactor Engineering and Bioprocess Development

Session II

I: **Carla Fernández-Blanco, University of A Coruña**
Veiga, MC; Kennes, C:
*Caproate Production by a co-culture of C. aceticum and C. kluyveri in an integrated Syngas Fermentation and Chain Elongation Process.*

II: **Andrea Gianico, National Research Council of Italy**
Crognale, S; Gallipoli, A; Tonanzi, B; Gazzola, G; Mazzeo, L; Piemonte, V; Rossetti, S; Braguglia, CM:

*Conversion of Food Waste into Caproate: a Balance between Substrate Utilization and Product Inhibition.*

III: **Maria Braune, German Biomass Research Center**
Sträuber, H; Gröngröft, A:

*Separation of Caproic and Caprylic Acid from a Maize Silage-Based Fermentation Broth.*

**12:00 - 13:00** Lunch

**13:00 - 13:30** Keynote XI

**Cesar Granda, BioVeritas LLC**

**13:30 - 13:40** Opinion piece III

**Associate. Prof. Dr. Ir. David Strik, Wageningen University**

**13:40 - 14:20** Microbial Physiology, Pathways, Informatics, and Genetics

Session IV

I: **Simona Crognale, National Research Council Italy**
Braguglia, CM; Gallipoli, A; Gianico, A; Gazzola, G; Massimi, A; Sbicego, M; Tonanzi, B; Rossetti, S:

*The Effect of OLR and feeding Strategy on Food Waste Chain-Elongating Microbiome.*

**II: Tinh Van Nguyen, KU Leuven**
Viverb, T; Mortiera, J; Liuc, B; Smetsd, I; Bernaertsd, K; Faustc, K; Lavignee, R; Poughonf, L; Dussapf, CG; Springaela, D:

*Thermocaproicibacter melissae, gen. nov., sp. nov., a novel thermophilic chain-elongating Bacterium that produces the high-commodity Chemical n-Caproate from Polymeric Carbohydrates.*

**14:20 - 14:30** Opinion piece IV

**Prof. Dr. Ir. Lars T. Angenent, University of Tübingen**

**14:30 - 15:30** Poster session

**15:30 - 16:00** Prizes

**16:00 – 16:45** Closing with coffee break (Restaurant Symposium)

## List of Poster presenters

(Number represents the poster booth location on the online platform.)

1. **Zeni, University of Verona**

   Rizzioli, F; Bolzonella, D, Battista:

   *Medium Chain Fatty Acids Production via biological Chain Elongation.*

2. **Xianbao Xu, Donghua University**
   Gu, X; Makinia, J; Li, X:

   *Production of Caproate during Food Waste Fermentation by different Inoculum.*

3. **Zhao Jihua, University of Science and Technology Beijing**
   Ma, M; Wu, W; Fu, P; Gao, M; Wang, Q:

   *Efficient Production of Caproate from Liquor Wastewater by Microbial Electrosynthesis: the promotion of Cathode Potential and Carbon Dioxide.*

4. **Panagiota Stamatopoulou, University of Vermont**
   Scarborough, MJ:

   *Impacts of Carbohydrate Loading Rates on Medium-Chain Carboxylic Acids Production.*

5. **Weiping Ren, Tongji University**
   He, PJ; Zhang, H; Lü, F:

   *Exploring the Effect of Temperature on Carbon Chain Elongation.*

6. **Filip Brodowski, Poznan University of Technology**
   Lezyk, M; Gutowska, N; Duber, A; Oleskowicz-Popiel, P:

   *Competition between Lactate-based and Ethanol-based Chain Elongation: the Influence of pH on Product Selectivity and Microbiome Structure.*

7. **Devson Paulo Palma Gomes, Federal University of Pernambuco**
   Santos, T; Motteran, F; Kato, M. T; Florêncio, L; Fernandes, B; Gavazza, S:

   *Caproic Acid produced from Acetic Acid and Ethanol using a mixture of Granular Anaerobic Sludge and Cassava Wastewater as inoculum.*

8. **P. Wu, Jiangnan University**
   Zhang, J; Zhang C; Li, J; Liu, H:

   *Microbial Electrosynthesis of Carboxylic Acids via Chain Elongation: Optimization of Electron Transfer.*

9. **Linjie Zhou, University of Queensland**
   Lai, C; Wu, M; Guo, J:

   *Hydrogen-driven CO2 Conversion to Medium-Chain Fatty Acids by a Mixed Culture: Pathways and Mechanisms.*

10. **Alberte Regueira, Ghent University**
    Sakarika, M; Rabaey, K; Ganigué R:

    *Sugars or Lactate? The Substrate determines Product Spectrum in Thermophilic Chain Elongation.*

12. **Jing Li, Jiangnan University**
    Wu, P; Zhang, J; Zhang. C; Liu, H:

    *Quorum Sensing Signals stimulate biofilm formation and its electroactivity for Chain Elongation: System Performance and underlying Mechanism.*

13. **Hui Yao, Tampere University**
    Vassilev, I; Kokko, M:

    *Methanol as a co-Substrate with Carbon Dioxide enhances Butyrate Production in Microbial Electrosynthesis.*

14. **Quinten Mariën, Ghent University**
    Regueira, A; Ganigué, R:

    *Steerable Isobutyric Acid production from H2 and CO2 by Clostridium luticellarii*.

15. **Christina Schäfer, Helmholtz Centre for Environmental Research – UFZ**
    Kleinsteuber, S; Bonatelli, ML; Sträuber, H:

    *Enrichment of Microbial Communities for the Conversion of Lignocellulose into Medium-Chain Carboxylic Acids.*

16. **Marten Gelderloos, Wageningen University**
    Sousa, DZ; Strik, D:

    *Evaluation of CO fed Carboxylic Acid producing Microbial Electrosynthesis Culture in newly designed Reactor*

17. **Oriol Cabau Peinado, Delft University of Technology**
    Straathof, AJJ; Jourdin, L:

    *Multiscale Computational Modelling as enabler for the Rational Design of Microbial Electrosynthesis Reactors for CO2 Reduction to C2-C6 Organics.*

18. **Hyojung Park, Korea Institute of Ceramic Engineering & Technology, Cheongju**
    Shin, S; Sang, B.-I; Jeon, BS:

    *Investigating the role of CoA Transferases derived from Megasphaera hexanoica using E. coli Platform producing C3~C8 Alcohols.*

19. **Agata Gallipoli, National Research Council of Italy**
    Masi, M; Tonanzi, B; Perlato, F; Balice, G; Gazzola, G; Braguglia CM:

    *New Strategies to produce Caproate from sugars-rich Extracts of Food Waste.*

20. **Alberto Robazza, Karlsruhe Institute of Technology**
    Welter, C; Kubisch, C; Neumann, A:

    *Rejoining two separated Wastes: co-Fermentation of Syngas and Pyrolysis Aqueous Condensate.*

22. **Jong In Won, Korea Institute of Ceramic Engineering & Technology, Cheongju**
Lee, JH; Sang, BI; Jeon, BS:

*Membrane Extraction Process equipped with CO2 Injection Module to recover n-Butyric Acid.*

23. **Shilva Shrestha, University of Michigan**
Abdullah, M; Raskin, L; Skerlos, S:

*Environmental Life Cycle Assessment of Caproic Acid Recovery from Brewery Waste Streams*.

24. **Meritxell Romans-Casas, University of Girona**
Perona-Vico, E; Dessì, P; Bañeras, L; Balaguer, MD; Puig, S:

*Linking bioelectrochemical CO2 Reduction and controlled Fermentation for high-rate Caproate Production.*

25. **Maximilian Flaiz, University of Ulm**
Bengelsdorf, FR; Dürre, P:

*A FAST new Gadget for the Acetogenic Chain Elongator Eubacterium limosum.*

26. **Pamela S. Ceron-Chafla, Delft University of Technology**
De Vrieze, J; Rabaey, K; van Lier, JB; Lindeboom, REF:

*Steering Product Formation in Anaerobic Processes: exploiting Interaction Effects between elevated CO2 Partial Pressure and Process Conditions.*

27. **Marijn Winkelhorst, Delft University of Technology**
Straathof, AJJ; Jourdin, L:

*Zooming in on the Biocatalyst Performance in Biofilm-Driven Microbial Electrosynthesis.*

28. **Omprakash Sarkar, Luleå University of Technology**
Rova, U; Christakopoulos, P; Matsakas, L:

*Bioaugmentation of Chain Elongating Clostridium kluyveri: A Strategy to Enhance Short and Medium Chain Carboxylic Acids from Cheese Whey*.

29. **Dianna Kitt, University of Michigan**
Song, H; Shrestha, S; Raskin, L:

*Acid Whey Composition Impacts the Efficiency of Lactate-Based Chain Elongation.*

30. **Kim Sang, Hanyang University**
Kim, TY; Kang, SC; Pranav, SN; Kim, HJ; Jeon, BS; Sang, BI:

*Syncretic n-Alkane Production with Bio- and Electrochemical Process for Application of Bio-Jet Fuel and Bio-Naphtha*.

31. **Nuria Otero-Logilde, University of A Coruña**
Iglesias-Iglesias R; Kennes, C; Veiga, MC:

*Codigestion of cheese Whey with Sewage Sludge for Caproic Acid Production.*

32. **Eduardo Hernández-Correa, National Autonomous University of Mexico**
Cuervo, F; Cervantes, FJ; Buitrón, G:

*Medium-Chain Carboxylic Acid Production from Rosé and White Wine lees in a CSTR with in-line Extraction System.*

34. **Aide Robles, Arizona State University**
Sundar, SV; Delgado, AG:

*Ethanol to Acetate Ratio and Hydrogen Partial Pressure control Butyrate and Butanol Production in a Semi-Batch Culture.*

35. **Silvia Greses, Biotechnological Processes Unit, Madrid**
Tomás-Pejó, E; González-Fernández, C:

*Ruminococcus as Key Bacteria for in-situ Carbon Chain Elongation without the need of adding external Electron Donors.*

36. **Diana C. Calvo, Arizona State University, Northern Arizona University**
Calvo, DC; Jang, HY; Lively, R; Torres, C; Rittmann, B:

*The Role of Membrane Selectivity on Syngas Fermentation in Membrane Biofilm Reactors.*

37. **Ling Leng, Hong Kong Polytechnic University**
Lee, PH:

*Caproate and 1,3-Propanediol Co-Production through Glycerol Fermentation and Fatty Acids Chain Elongation.*

38. **Grégoire B.L. Henry, Catholic University of Louvain**
Isenborghs, A; Gerin, P:

*Medium Chain Carboxylic Acids Production from Brewer's Spent Grains supplemented with $H_2$ and $CO_2$ by a Mixed Microbial Culture.*

39. **Jerome Undiandeye, Helmholtz Centre for Environmental Research – UFZ**

Gallegos, D; Hudari, MSB; Abdulkadir, N; Stinner, W; Kleinsteuber, S; Sträuber, H:

*Medium-chain carboxylates production from agricultural residues – kinetic study, effect of an enriched microbiome and techno-economic analysis.*

40. **Wen Wang**, **Beijing University of Chemical Technology**
Wu, W; Liu, C; Zhang, Y:

*Heterogeneous Catalyst-Microbiome Hybrids for efficient CO-driven C6 Carboxylic Acid Synthesis via metabolic Pathway Manipulation.*