

**PROGRAMME**

23 – 25 May 2022 · Atrium-Hotel · Mainz

**Himmelfahrtstagung on  
Bioprocess Engineering 2022 –  
Future Bioprocesses for a  
Sustainable Industry**

[www.dechema.de/BioPro22](http://www.dechema.de/BioPro22)



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**FROM GENES  
TO PRODUCTS**

## KEYNOTE SPEAKER/AWARDS/SPONSORS & EXHIBITORS/COMMITTEE

### KEYNOTE SPEAKER



**Michael Japs**  
Genomatica, San Diego/USA



**Marco Jenzsch**  
Roche Pharma Technical Operations, Penzberg/D

### SCIENTIFIC AWARDS



**DECHEMA Industrial Bioprocess Award 2022**  
**Marcel Mann**  
RWTH Aachen

### EXHIBITORS & SUPPORTERS

**aquilabiolabs**  
A SCIENTIFIC BIOPROCESSING COMPANY

**GETINGE** 

### SCIENTIFIC COMMITTEE

<b>Sonja Berensmeier</b>	TU München/D
<b>Wlfrid Blümke (Chair)</b>	Evonik Operations GmbH, Hanau/D
<b>Bastian Blombach</b>	TU München/D
<b>Kathrin Castiglione</b>	Friedrich-Alexander-Universität, Erlangen-Nürnberg/D
<b>Detlef Eisenkrätzer</b>	Roche Diagnostics GmbH, Penzberg/D
<b>Markus Fritsch</b>	Fritsch Bioprocess   Engineering   Consulting, Leipzig/D
<b>Alexander Grünberger</b>	Universität Bielefeld/D
<b>Martin Poggel</b>	Bayer AG, Leverkusen/D
<b>Gerald Striedner</b>	University of Natural Resources and Life Sciences, Vienna/A
<b>Ralf Takors</b>	Universität Stuttgart/D
<b>Roland Ulber</b>	Universität Kaiserslautern/D
<b>Thomas Walther</b>	TU Dresden/D

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## VENUE

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## PROGRAMME AT A GLANCE

## Sunday, 22 May 2022

19:00	<b>Pre-Dinner Meeting</b>

## Monday, 23 May 2022

8:20	<b>Welcome Address</b>
8:30	<b>KEYNOTE LECTURE</b> M. Japs
	<b>Bioprocess solutions to achieve sustainable development goals</b>
9:15	F. Mittermeier
9:45	A. Langsdorf
10:15	Coffee Break
10:45	W. Blümke
11:15	T. Müller
11:45	Coffee Break
12:15	<b>Promotionspreis</b> M. Mann
12:45	Lunch Break
	<b>Approaches for enabling a circular economy</b>
13:45	N. Wagner
14:15	A. Becker
14:45	J. Fees/A. Deitert
15:15	J. Kager
15:45	Coffee Break
	<b>Novel bioprocesses as a driver for bioeconomy</b>
16:15	A. Schmidt
16:45	F. Buthmann
17:30	<b>General meeting of the working group Bioprocess Engineering</b> (members only)
18:00	<b>Poster Party</b>
20:00	End of Day 1

## PROGRAMME AT A GLANCE

### Tuesday, 24 May 2022

8:30	<b>KEYNOTE LECTURE</b> M. Jenzsch
	<b>Sustainability in biopharma processes</b>
9:15	D. Eisenkrätzer
9:45	M. Kuschel
10:15	Coffee Break
	<b>Smart bioreactor and Downstream processing concepts</b>
10:45	A. Oudshoorn
11:15	M. Tesanovic
11:45	L. Hellekes
12:15	Lunch Break
13:15	D. Vorländer
13:45	S. Täuber
14:15	L. Kaspersetz
14:45	Coffee Break
15:15	A. Moser
15:45 16:15	D. Eixenberger
16:30	<b>Board Meeting (16:30 – 17:30)</b>
18:15	Departure for evening program
19:00	<b>Conference Dinner on the boat/boat departs</b>

### Wednesday, 25 May 2022

8:30	<b>POSTER AWARD</b> 3 best posters
	<b>Open topic</b>
9:00	S. Wahl
9:20	J. Müller
9:40	A. Schmeckeber
10:00	Coffee Break
10:20	C. Dinter
10:40	M. Wolff
11:00	H. Helgers
11:20	N. Erdmann
11:40	<b>Closing (11:40-12:00)</b>

## PROGRAMME

## Monday, 23 May 2022

Room: ACC II (D1 - D3)

08:20 **WELCOME ADDRESS**

Chair: W. Blümke, Evonik Operations GmbH, Hanau/D; R. Takors, Universität Stuttgart/D

Chair: R. Takors, Universität Stuttgart/D

08:30

**KEYNOTE LECTURE****A New Age of Biomanufacturing | Accelerating the Materials Transition**M. Japs<sup>1</sup>; <sup>1</sup> Genomatica, Inc., /USA**Bioprocess solutions to achieve sustainable development goals**

Chair: R. Castiglione, FAU Erlangen-Nürnberg/D

09:15 **Co-cultivation of filamentous fungi for the production of adapted enzyme mixtures for the hydrolysis of wheat bran**F. Mittermeier<sup>1</sup>; K. Xypolia Vasilá<sup>1</sup>; N. Hafner<sup>1</sup>; D. Weuster-Botz<sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching b. München/D09:45 **Green waste as a growth medium and source of peroxidases**A. Langsdorf<sup>1</sup>; R. Ulber<sup>2</sup>; D. Holtmann<sup>1</sup>; <sup>1</sup> University of Applied Sciences Mittelhessen, Giessen/D; <sup>2</sup> University of Kaiserslautern, Kaiserslautern/D10:15 **Coffee Break**Chair: D. Eisenkrätzer, Roche Diagnostics GmbH, Penzberg/D10:45 **The Chances for Biotech Industry in Fighting the Climate Change Challenge**W. Blümke<sup>1</sup>; <sup>1</sup> Evonik Operations GmbH, Hanau/D11:15 **Introduction of mutual interdependencies as a relational framework of synthetic co-cultures**T. Müller<sup>1</sup>; S. Schick<sup>1</sup>; J. Beck<sup>1</sup>; G. Sprenger<sup>1</sup>; R. Takors<sup>1</sup>; <sup>1</sup> University of Stuttgart/D11:45 **Coffee Break**Chair: W. Blümke, Evonik Operations GmbH, Hanau/D12:15 **DECHEMA Industrial Bioprocess Award 2022****Online Monitoring Devices for Lab Scale Synthesis Gas Fermentation Using the Model Acetogen Clostridium ljungdahlii**M. Mann, RWTH Aachen/D12:45 **Lunch Break**

Monday, 23 May 2022

Room: ACC II (D1 - D3)

**Approaches for enabling a circular economy**

Chair: R. Ulber, TU Kaiserslautern/D

- 13:45 **Engineering E. coli for the carbon-conserving conversion of ethylene glycol to acetyl-CoA and derived products**  
N. Wagner<sup>1</sup>; F. Bade<sup>1</sup>; K. Rabe<sup>1</sup>; T. Walther<sup>1</sup>; <sup>1</sup> Technische Universität Dresden, Dresden/D
- 14:15 **Re-valorization of Electronic Waste - Moss as a Biosorber for Gold Recovery?**  
 C. Karampatzis<sup>1</sup>; B. Böhm<sup>1</sup>; K. Castiglione<sup>1</sup>; E. Gabor<sup>2</sup>; A. Becker<sup>1</sup>; <sup>1</sup> Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen/D; <sup>2</sup> BRAIN Biotech AG, Zwingenberg/D
- 14:45 **Establishing a circular phosphate economy – Polyphosphate production in *Saccharomyces cerevisiae***  
 P. Demling<sup>1</sup>; J. Fees<sup>1</sup>; A. Deitert<sup>1</sup>; L. Blank<sup>1</sup>; <sup>1</sup> RWTH Aachen University, Aachen/D
- 15:15 **The usage of model-based techniques to handle complex and variable multi-substrate streams to guarantee stable and sustainable bioconversion processes**  
J. Kager<sup>1</sup>; P. Sinner<sup>2</sup>; C. Herwig<sup>2</sup>; <sup>1</sup> Competence Center CHASE GmbH, Vienna/A; <sup>2</sup> Technische Universität Wien, Vienna/A

15:45 Coffee Break

**Novel bioprocesses as a driver for bioeconomy**

Chair: A. Grünberger, Universität Bielefeld/D

- 16:15 **Digital Twins for Continuous mRNA Production**  
A. Schmidt<sup>1</sup>; H. Helgers<sup>1</sup>; A. Hengelbrock<sup>1</sup>; J. Strube<sup>1</sup>; <sup>1</sup> Clausthal University of Technology/ Institute for Separation and Process Technology, Clausthal-Zellerfeld/D
- 16:45 **Centrifugal Partition Chromatography - Optimization and Experimental Validation of long-term Operability**  
F. Buthmann<sup>1</sup>; J. Koop<sup>1</sup>; G. Schembecker<sup>1</sup>; <sup>1</sup> TU Dortmund, Dortmund/D
- 17:30 **General meeting of the working group Bioprocess Engineering**  
 (members only, 17:30 – 18:00)
- 18:00 **POSTER PARTY** (18:00 – 20:00)

## PROGRAMME

**Tuesday, 24 May 2022**

Room: ACC II (D1 - D3)

Chair: D. Eisenkrätzer, Roche Diagnostics GmbH, Penzberg/D

- 08:30 **KEYNOTE LECTURE**  
**Steering towards a sustainable future of bioprocessing – How to embrace our environmental and social responsibility**  
 M. Jenzsch<sup>1</sup>; <sup>1</sup> Roche Diagnostics GmbH, Penzberg/D

**Sustainability in biopharma processes**

Chair: M. Poggel, Bayer AG, Leverkusen/D

- 09:15 **Single Use Equipment or Re-usable Equipment for Bioprocessing – Decision Drivers and Consequences for Sustainability**  
 D. Eisenkrätzer<sup>1</sup>; <sup>1</sup> Roche Diagnostics GmbH, Penzberg/D
- 09:45 **From equipment characterization in biopharma towards robust cell culture performance – the importance of hydrodynamic stress**  
 M. Kuschel<sup>1</sup>; O. Srom<sup>2</sup>; M. Soos<sup>2</sup>; E. Hasenfus<sup>1</sup>; T. Wucherpennig<sup>1</sup>; <sup>1</sup> Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach an der Riß/D; <sup>2</sup> University of Chemistry and Technology Prague, Prague/CZ

- 10:15 **Coffee Break**

**Smart bioreactor and downstream processing concepts**

Chair: S. Berensmeier, TU München/D

- 10:45 **Be FAST: How state-of-the-art bioreactor technology FAST enables cost-effective bioprocessing at scale**  
 A. Oudshoorn<sup>1</sup>; A. Bohnenkamp<sup>1</sup>; <sup>1</sup> DAB Bio, Delft/NL
- 11:15 **Digitalization and automation of the innovative Rotor-Stator Magnetic Separator on pilot-scale**  
 M. Tesanovic<sup>1</sup>; <sup>1</sup> TU München, Garching b. München/D
- 11:45 **From Frozen Working Cell Bank to Final Product Assay - Closing the Loop of Autonomous High-Throughput Strain Characterization**  
 L. Helleckes<sup>1</sup>; D. Puchta<sup>1</sup>; H. Czech<sup>1</sup>; C. Müller<sup>1</sup>; H. Morschett<sup>1</sup>; W. Wiechert<sup>1</sup>; M. Oldiges<sup>1</sup>; <sup>1</sup> Forschungszentrum Jülich GmbH, Jülich/D

- 12:15 **Lunch Break**



Tuesday, 24 May 2022

Room: ACC II (D1 - D3)

Smart bioreactor and downstream processing concepts

Chair: G. Striedner, University of Natural Resources and Life Sciences, Vienna/A

- 13:15 **In-vitro cultivation of gut microbiota – an innovative peristaltic mixed tubular bioreactor for medical research applications**  
D. Vorländer<sup>1</sup>; G. Schultz<sup>1</sup>; D. Rasch<sup>1</sup>; K. Dohnt<sup>1</sup>; <sup>1</sup> Technische Universität Braunschweig, Braunschweig/D
- 13:45 **Dynamic microfluidic single-cell cultivation: From concept to application for the cultivation of *Corynebacterium glutamicum***  
S. Täuber<sup>1</sup>; L. Blöbaum<sup>1</sup>; A. Grünberger<sup>1</sup>; <sup>1</sup> Multiscale Bioengineering, Bielefeld University, Bielefeld/D
- 14:15 **Across scales: An integrated robotic cultivation platform for accelerated bioprocess development**  
L. Kaspersetz<sup>1</sup>; J. Aizpuru<sup>1</sup>; N. Krausch<sup>1</sup>; K. Fabian<sup>1</sup>; J. Kim<sup>1</sup>; S. M.-Therese<sup>1</sup>; M. Cruz Bournazou<sup>1</sup>; P. Neubauer<sup>1</sup>; <sup>1</sup> Technische Universität Berlin/D

14:45 Coffee Break

Smart bioreactor and downstream processing concepts

Chair: R. Takors, Universität Stuttgart/D

- 15:15 **Investigating the effects of bioreactor inhomogeneities on cell growth and productivity using a combined physical and mathematical model approach**  
A. Moser<sup>1</sup>; D. Maier<sup>1</sup>; R. Pörtner<sup>2</sup>; V. Hass<sup>1</sup>; <sup>1</sup> Furtwangen University, Villingen-Schwenningen/D; <sup>2</sup> Technical University Hamburg, Hamburg/D
- 15:45 **Smart Reactors - Stimuli-responsive Polymer Brushes as Immobilization Matrix for Autonomous Reaction Control**  
D. Eixenberger<sup>1</sup>; A. Kumar<sup>1</sup>; A. Dawood<sup>1</sup>; A. Liese<sup>1</sup>; <sup>1</sup> Hamburg University of Technology - Institute of Technical Biocatalysis, Hamburg/D
- 16:30 **Board Meeting** (16:30 – 17:30)
- 18:30 Departure for the evening programme
- 19:00 **Conference Dinner on the boat** (19:00 – 23:00 / 0:00)

## PROGRAMME

## Wednesday, 25 May 2022

Room: ACC II (D1 - D3)

08:30 **POSTER AWARD**  
Chair: S. Freyer, BASF SE, Ludwigshafen

Open topic

Chair: T. Walther, TU Dresden/D

09:00 **Predicting metabolic adaptation under dynamic substrate conditions using a resource dependent kinetic model: A case study using *Saccharomyces cerevisiae***  
K. Verhagen<sup>1</sup>; S. Eerden<sup>1</sup>; B. Sikkema<sup>1</sup>; S. Wahl<sup>2</sup>; <sup>1</sup> Delft University of Technology, Delft/NL; <sup>2</sup> FAU Erlangen-Nuernberg, Erlangen/D

09:20 **From single-gene translation to global elongation assessment – a dynamic translational model for *Escherichia coli***  
J. Müller<sup>1</sup>; M. Siemann-Herzberg<sup>1</sup>; R. Takors<sup>1</sup>; <sup>1</sup> University of Stuttgart - Institute of Biochemical Engineering, Stuttgart/D

09:40 **Productive Biofilms on microstructured surfaces**  
A. Schmeckebier<sup>1</sup>; R. Ulber<sup>1</sup>; <sup>1</sup> TU Kaiserslautern/D

10:00 Coffee Break

Open topic

Chair: M. Fritsch, Fritsch Bioprocess, Engineering, Consulting, Leipzig/D

10:20 **Minimal-invasive Online Monitoring of Dissolved Oxygen Tension, Viscosity, Scattered Light and pH in Shake Flask Cultivations**  
C. Dinter<sup>1</sup>; J. Büchs<sup>1</sup>; D. Flitsch<sup>2</sup>; M. Mertens<sup>2</sup>; <sup>1</sup> RWTH Aachen / AVT - Bioverfahrenstechnik, Aachen/D; <sup>2</sup> Pyro Science GmbH, Aachen/D

10:40 **The role of target aggregation throughout the steric exclusion chromatography**  
F. Eilts<sup>1</sup>; K. Lothert<sup>1</sup>; M. Wolff<sup>1</sup>; <sup>1</sup> University of Applied Sciences Mittelhessen (THM), Giessen/D

11:00 **Towards Autonomous Process Control – Digital Twin for Antibody and VLP Manufacturing Using a Dynamic Metabolic Model**  
H. Helgers<sup>1</sup>; A. Schmidt<sup>1</sup>; A. Hengelbrock<sup>1</sup>; J. Strube<sup>1</sup>; <sup>1</sup> Clausthal University of Technology/ Institute for Separation and Process Technology, Clausthal-Zellerfeld/D

11:20 **Investigation of the efficiency of microbiologically induced calcium carbonate precipitation**  
N. Erdmann<sup>1</sup>; M. Lorenz<sup>1</sup>; K. de Payrebrune<sup>1</sup>; D. Strieth<sup>1</sup>; <sup>1</sup> TU Kaiserslautern/D

11:40 **Closing** (11:40 – 12:00)

Chair: W. Blümke, Evonik Operations GmbH, Hanau/D, R. Takors, Universität Stuttgart/D

- P 001 **Use of phototrophic biofilms to improve plant growth**  
J. Kollmen<sup>1</sup>; M. Faul<sup>1</sup>; D. Strieth<sup>1</sup>; <sup>1</sup> TU Kaiserslautern, Lehrgebiet für Bioverfahrenstechnik, Kaiserslautern/D
- 
- P 002 **Arduino-based photo- and fluorimeter for histamine measurement in wine**  
S. Di Nonno<sup>1</sup>; R. Ulber<sup>1</sup>; <sup>1</sup> TU Kaiserslautern, Kaiserslautern/D
- 
- P 003 **Development of a portable analysis system for bioprocess and environmental analysis**  
E. Könnel<sup>1</sup>; R. Ulber<sup>1</sup>; <sup>1</sup> Technische Universität Kaiserslautern, Lehrgebiet für Bioverfahrenstechnik, Kaiserslautern/D
- 
- P 004 **Microbial production of ethyl acetate from a dairy waste stream: Advances in downstream processing via membrane technology**  
A. Hoffmann<sup>1</sup>; A. Franz<sup>1</sup>; C. Löser<sup>1</sup>; T. Hoyer<sup>2</sup>; M. Weyd<sup>2</sup>; T. Walther<sup>1</sup>; <sup>1</sup> TU Dresden, Institute of Natural Materials Technology, Chair of Bioprocess Engineering, Dresden/D; <sup>2</sup> Fraunhofer Institute for Ceramic Technologies and Systems (IKTS), Hermsdorf/D
- 
- P 005 **Co-cultivation of microalgae with filamentous fungi in marine environments: Utilization of waste products and agricultural residues**  
M. Tölle<sup>1</sup>; W. Hußmann<sup>1</sup>; A. Kuenz<sup>1</sup>; <sup>1</sup> Thünen Institut für Agrartechnologie, Braunschweig/D
- 
- P 006 **Regulation of glucose uptake in *Vibrio natriegens* by environmental and physiological factors**  
E. Straube<sup>1</sup>; C. Remedios Frazao<sup>2</sup>; T. Walther<sup>1</sup>; <sup>1</sup> TU Dresden/D; <sup>2</sup> TU Dresden, ZINT, Dresden/D
- 
- P 007 **Transfer of biotechnological Lab-Experiments to Education – a new way for lab courses**  
L. Geuer<sup>1</sup>; R. Ulber<sup>2</sup>; <sup>1</sup> TU Kaiserslautern, Chair of Bioprocess Engineering, Kaiserslautern/D; <sup>2</sup> TU Kaiserslautern/D
- 
- P 008 **Process design for the co-cultivation of *Saccharomyces cerevisiae* and *Bacillus subtilis***  
A. Hoffmann<sup>1</sup>; V. Schmitz<sup>1</sup>; C. Löser<sup>1</sup>; T. Walther<sup>1</sup>; <sup>1</sup> TU Dresden, Institute of Natural Materials Technology, Chair of Bioprocess Engineering, Dresden/D
- 
- P 009 **Accessing biopharmaceutical large-scale conditions via a single multi-compartment bioreactor (SMCB)**  
L. Gaugler<sup>1</sup>; Y. Mast<sup>1</sup>; J. Fitschen<sup>2</sup>; S. Hofmann<sup>2</sup>; M. Schlüter<sup>2</sup>; R. Takors<sup>1</sup>; <sup>1</sup> University of Stuttgart, Stuttgart/D; <sup>2</sup> Hamburg University of Technology (TUHH), Hamburg/D
- 
- P 010 **Anodic respiration of *Pseudomonas putida* in parallel bioelectrochemical systems**  
A. Gemünde<sup>1</sup>; D. Holtmann<sup>1</sup>; <sup>1</sup> Technische Hochschule Mittelhessen, Gießen/D
- 
- P 011 **Cascade use a German ryegrass for the production of valuable bioproducts with a view to a Biorefinery**  
L. Varriale<sup>1</sup>; R. Ulber<sup>1</sup>; K. Kuka<sup>2</sup>; N. Tippkötter<sup>3</sup>; <sup>1</sup> TU Kaiserslautern/D; <sup>2</sup> Julius Kühn Institute, Braunschweig/D; <sup>3</sup> University of Applied Sciences Aachen, Jülich/D
- 
- P 012 **Effect of red and blue LED light on CHO batch cultures with regard to optogenetic switches**  
S. Föllner<sup>1</sup>; R. Takors<sup>1</sup>; <sup>1</sup> University of Stuttgart - Institute of Biochemical Engineering, Stuttgart/D

## POSTER

- P 013 **Bioplastic from lignin – Fermentation of *R. jostii* for production of 2,4-pyridinedicarboxylic acid**  
J. Notheisen<sup>1</sup>; R. Takors<sup>1</sup>; <sup>1</sup> University of Stuttgart, Stuttgart/D
- 
- P 014 **Cell-free synthesis of silver nanoparticles in spent media of different *Aspergillus* sp.**  
A. Boldt<sup>1</sup>; T. Walther<sup>1</sup>; <sup>1</sup> TU Dresden, Dresden/D
- 
- P 015 **Towards a sustainable enzymatic production of metaraminol with integrated in situ reactive extraction**  
L. Grabowski<sup>1</sup>; M. Doeker<sup>2</sup>; A. Jupke<sup>2</sup>; D. Rother<sup>3</sup>; <sup>1</sup> Forschungszentrum Jülich GmbH/ RWTH Aachen University, Jülich/D; <sup>2</sup> RWTH Aachen University, Aachen/D; <sup>3</sup> Forschungszentrum Jülich GmbH/ RWTH Aachen University, Aachen/D
- 
- P 016 **Digital Twin under regulatory demanded Quality-by-Design approach of chromatography processes in mRNA and scFv manufacturing**  
F. Vetter<sup>1</sup>; J. Strube<sup>2</sup>; <sup>1</sup> TU Clausthal, Clausthal-Zellerfeld/D; <sup>2</sup> Technische Universität Clausthal, Clausthal-Zellerfeld/D
- 
- P 017 **Digital Twin and PAT for Process Design and Optimization for HIV-Gag VLP Production in HEK293 Cells Including Purification**  
A. Hengelbrock<sup>1</sup>; J. Rosengarten<sup>2</sup>; J. Stitz<sup>2</sup>; H. Helgers<sup>1</sup>; A. Schmidt<sup>1</sup>; J. Strube<sup>1</sup>; <sup>1</sup> Clausthal University of Technology/ Institute for Separation and Process Technology, Clausthal-Zellerfeld/D; <sup>2</sup> Technische Hochschule Köln, Köln/D
- 
- P 019 **Enzymatic P-Adjustment in Monogastric Animal Feeding: FT-IR Based Inline Analysis**  
N. Widderich<sup>1</sup>; M. Kaltschmitt<sup>2</sup>; A. Liese<sup>1</sup>; P. Bubenheim<sup>1</sup>; <sup>1</sup> Hamburg University of Technology - Institute of Technical Biocatalysis, Hamburg/D; <sup>2</sup> Hamburg University of Technology (TUHH), Hamburg/D
- 
- P 020 **Fresh red blood cells: scale-up of ex vivo erythroblast expansion for transfusion purposes**  
J. Gallego Murillo<sup>1</sup>; M. von Lindern<sup>2</sup>; E. van den Akker<sup>2</sup>; C. Bernal Martinez<sup>3</sup>; T. van Arragon<sup>3</sup>; S. Wahl<sup>4</sup>; <sup>1</sup> Delft University of Technology, Delft/NL; <sup>2</sup> Sanquin Research, Amsterdam/NL; <sup>3</sup> Applikon Biotechnology B.V., Delft/NL; <sup>4</sup> FAU Erlangen-Nuernberg, Erlangen/D
- 
- P 021 **Production of fat tissue in bioreactors. Towards a scalable process for cultivated meat.**  
S. Pedraza-de la Cuesta<sup>1</sup>; J. Cohen<sup>1</sup>; J. Slenter<sup>1</sup>; R. Out<sup>1</sup>; <sup>1</sup> Meatable, Delft/NL
- 
- P 022 **Investigation of exopolysaccharide formation in *Vibrio natriegens***  
C. Schulze<sup>1</sup>; M. Hädrich<sup>1</sup>; B. Blombach<sup>1</sup>; <sup>1</sup> Technical University of Munich Campus Straubing for Biotechnology and Sustainability, Straubing/D
- 
- P 023 **Development of a Novel Adenosine Triphosphate Regeneration System Using the Bulk Chemical Ethylene Glycol**  
J. Kundoch<sup>1</sup>; F. Kraußner<sup>2</sup>; T. Walther<sup>2</sup>; A. Liese<sup>1</sup>; <sup>1</sup> Hamburg University of Technology (TUHH), Hamburg/D; <sup>2</sup> Technische Universität Dresden (TUD), Dresden/D
- 
- P 024 **Production of valuable chemicals with yeasts and clostridia by electro-assisted fermentation**  
J. Hengsbach<sup>1</sup>; D. Holtmann<sup>2</sup>; R. Ulber<sup>1</sup>; <sup>1</sup> TU Kaiserslautern, Kaiserslautern/D; <sup>2</sup> Technische Hochschule Mittelhessen (THM) - University of Applied Sciences, Giessen/D

- P 025 **Development and application of a microfluidic platform for single- cell cultivation of CHO suspension cell lines**  
J. Schmitz<sup>1</sup>; B. Yermakov<sup>1</sup>; O. Hertel<sup>1</sup>; T. Noll<sup>1</sup>; A. Grünberger<sup>1</sup>; <sup>1</sup> Bielefeld University, Bielefeld/D
- 
- P 026 **Low-biomass concept for industrial biotechnology with engineered *Vibrio natriegens***  
M. Hädrich<sup>1</sup>; C. Schulze<sup>1</sup>; B. Blombach<sup>1</sup>; <sup>1</sup> Technical University of Munich, Campus Straubing for Biotechnology and Sustainability, Straubing/D
- 
- P 027 **Combination of Kolbe electrolysis with microbial synthesis of isopropanol**  
N. Teetz<sup>1</sup>; D. Holtmann<sup>1</sup>; F. Harnisch<sup>2</sup>; M. Stöckl<sup>3</sup>; <sup>1</sup> Technische Hochschule Mittelhessen, Gießen/D; <sup>2</sup> Helmholtz Center for Environmental Research - UFZ, Leipzig/D; <sup>3</sup> DEHEMA Research Institute, Frankfurt a.M./D
- 
- P 028 **Towards a Digital Twin for Enzymatic Hydrolysis Processes in a Packed Bed Reactor**  
C. Appl<sup>1</sup>; A. Moser<sup>1</sup>; C. Fittkau<sup>1</sup>; F. Baganz<sup>2</sup>; V. Hass<sup>1</sup>; <sup>1</sup> Furtwangen University, VS-Schwenningen/D; <sup>2</sup> University College London (UCL), London/UK
- 
- P 029 **Combining microcultivation and automation to enable accelerated process development for natural bacteriocin producers**  
V. Steier<sup>1</sup>; S. Reich<sup>2</sup>; C. Riedel<sup>2</sup>; W. Wiechert<sup>1</sup>; M. Oldiges<sup>1</sup>; <sup>1</sup> Forschungszentrum Jülich, Jülich/D; <sup>2</sup> Ulm University, Ulm/D
- 
- P 030 **Microscale cultivation of *Trichoderma reesei* RutC30 enables strain phenotyping and bioprocess development in batch and fed-batch mode with higher throughput**  
K. Rohr<sup>1</sup>; L. Gremm<sup>1</sup>; B. Geinitz<sup>1</sup>; W. Wiechert<sup>1</sup>; M. Oldiges<sup>1</sup>; <sup>1</sup> Forschungszentrum Jülich/D
- 
- P 031 **Enzymatic Revalorization of *Fucus vesiculosus* Biomass from Beach Wrack as Source of Biopolymers**  
A. Malvis Romero<sup>1</sup>; F. Brozio<sup>1</sup>; C. Burkhardt<sup>1</sup>; L. Baruth<sup>1</sup>; G. Antranikian<sup>1</sup>; A. Liese<sup>1</sup>; <sup>1</sup> Hamburg University of Technology, Hamburg/D
- 
- P 032 **Mutasynthesis of Aurachins in *Escherichia coli***  
S. Kruth<sup>1</sup>; C. Zimmermann<sup>2</sup>; J. Pietruszka<sup>2</sup>; M. Nett<sup>1</sup>; <sup>1</sup> TU Dortmund/D; <sup>2</sup> Heinrich-Heine-University Düsseldorf at Forschungszentrum Jülich/D
- 
- P 033 **CRISPRi enables fast growth followed by stable aerobic pyruvate formation in *Escherichia coli* without auxotrophy**  
M. Ziegler<sup>1</sup>; L. Hägele<sup>1</sup>; T. Gäbele<sup>1</sup>; R. Takors<sup>1</sup>; <sup>1</sup> University of Stuttgart/D
- 
- P 034 **Development of a plug-in system for photobioreactors**  
D. Strieth<sup>1</sup>; N. Erdmann<sup>1</sup>; J. Kollmen<sup>1</sup>; J. Kalisch<sup>1</sup>; B. Risch<sup>2</sup>; <sup>1</sup> TU Kaiserslautern/D; <sup>2</sup> Universität Koblenz-Landau, Landau/D
- 
- P 035 **Protein Crystallization by Crystal Contact Engineering and Monitoring of Crystallization by Image Analysis using Deep-Learning**  
B. Walla<sup>1</sup>; D. Bischoff<sup>1</sup>; <sup>1</sup> Technical University of Munich, Garching near Munich/D

## POSTER

- P 036 **Enabling Biocatalysis with a Fine Bubble Aeration towards Sustainable Bioprocess Optimization**  
Z. Perçin<sup>1</sup>; P. Bubenheim<sup>1</sup>; M. Schlüter<sup>2</sup>; A. Liese<sup>1</sup>; <sup>1</sup> Hamburg University of Technology, Institute of Technical Biocatalysis, Hamburg/D; <sup>2</sup> Hamburg University of Technology, Institute of Multiphase Flows, Hamburg/D
- 
- P 038 **Micro oxygen profiling to investigate morphological changes of filamentous *Lentzea aerocolonigenes* due to particle supplementation**  
A. Dinius; Z. Kozanecka<sup>1</sup>; R. Krull<sup>1</sup>; <sup>1</sup> TU Braunschweig/D
- 
- P 039 **Construction of a synthetic metabolic pathway for direct production of 2,4-dihydroxybutyric acid from one- and two-carbon alcohols**  
C. Remedios Frazao<sup>1</sup>; K. Rabe<sup>1</sup>; T. Walther<sup>1</sup>; <sup>1</sup> Institute of Natural Materials Technology, TU Dresden/D
- 
- P 042 **Autonomous characterization of biocatalysts under real process conditions**  
L. Hennecke<sup>1</sup>; L. Schaare<sup>2</sup>; M. Skiborowski<sup>2</sup>; A. Liese<sup>1</sup>; <sup>1</sup> Institute of Technical Biocatalysis, Hamburg University of Technology, Hamburg/D; <sup>2</sup> Institute of Process Systems Engineering, Hamburg University of Technology, Hamburg/D
- 
- P 043 **Engineering and scale-up of an amoeba-based bioprocess for the production of the cannabinoid precursor olivetolic acid**  
J. Kufs<sup>1</sup>; C. Reimer<sup>1</sup>; E. Steyer<sup>1</sup>; C. Höfler<sup>1</sup>; V. Valiante<sup>1</sup>; F. Hillmann<sup>1</sup>; L. Regestein<sup>1</sup>; <sup>1</sup> Leibniz Institut für Naturstoff-Forschung und Infektionsbiologie e.V. - Hans-Knöll-Institut, Jena/D
- 
- P 044 **Enzyme Catalysis at Elevated Pressure**  
M. Schmalke<sup>1</sup>; M. Aßmann<sup>2</sup>; J. Andrich<sup>2</sup>; J. Kuballa<sup>2</sup>; P. Bubenheim<sup>1</sup>; A. Liese<sup>1</sup>; <sup>1</sup> Hamburg University of Technology (TUHH), Hamburg/D; <sup>2</sup> GALAB Laboratories GmbH, Hamburg/D
- 
- P 046 **LandLessFood-blue: Microalgae as an important component for food security in 2100**  
W. Hußmann<sup>1</sup>; M. Tölle<sup>1</sup>; A. Kuenz<sup>1</sup>; <sup>1</sup> Thünen Institut für Agrartechnologie, Braunschweig/D
- 
- P 047 **Optimization of an Enzymatic Cascade using a Mechanistic Model**  
R. Siedentop<sup>1</sup>; M. Dziennus<sup>1</sup>; S. Lütz<sup>1</sup>; K. Rosenthal<sup>1</sup>; <sup>1</sup> TU Dortmund, Lehrstuhl für Bioprozesstechnik, Dortmund/D
- 
- P 048 **Foam-free rhamnolipid production process by a novel membrane-stirrer system**  
T. Karmainski<sup>1</sup>; P. Bongartz<sup>1</sup>; M. Meyer<sup>1</sup>; T. Tiso<sup>1</sup>; M. Wessling<sup>1</sup>; L. Blank<sup>1</sup>; <sup>1</sup> RWTH Aachen University, Aachen/D
- 
- P 049 **Microbes under pressure: Enhancing the performance of filamentous fungi in stirred tank reactor cultivation**  
S. Weiser<sup>1</sup>; J. Kufs<sup>1</sup>; J. Fricke<sup>1</sup>; B. Bardl<sup>1</sup>; Y. Huang<sup>1</sup>; V. Valiante<sup>1</sup>; D. Hoffmeister<sup>2</sup>; L. Regestein<sup>1</sup>; <sup>1</sup> Leibniz Institute for Natural Product Research and Infection Biology - Hans Knöll Institute, Jena/D; <sup>2</sup> Friedrich Schiller University Jena/D
- 
- P 050 **Engineering the biocatalytic synthesis of aromatic amides**  
J. Rolff<sup>1</sup>; L. Grebe<sup>1</sup>; C. Willrodt<sup>2</sup>; M. Rack<sup>2</sup>; S. Lütz<sup>1</sup>; K. Rosenthal<sup>1</sup>; <sup>1</sup> TU Dortmund University, Dortmund/D; <sup>2</sup> BASF SE, Ludwigshafen/D

- P 051 **Genome mining and activity screening: Towards novel fungal unspecific peroxygenases**  
A. Kinner<sup>1</sup>; K. Rosenthal<sup>1</sup>; S. Lütz<sup>1</sup>; <sup>1</sup> TU Dortmund University, Dortmund/D
- 
- P 052 **Towards a Digital Twin for Agricultural Biogas Plants**  
C. Fittkau<sup>1</sup>; A. Moser<sup>1</sup>; C. Appl<sup>1</sup>; F. Baganz<sup>2</sup>; V. Hass<sup>1</sup>; <sup>1</sup> Hochschule Furtwangen , Villingen-Schwenningen/D; <sup>2</sup> University College London, London/UK
- 
- P 053 **On-Board Analytic: Using a microbioreactor to quantify microbial urease activity during cultivation with the goal of improving biocementation applications**  
F. Lapierre<sup>1</sup>; R. Huber<sup>1</sup>; <sup>1</sup> Hochschule München, München/D
- 
- P 054 **Development of a Label-free Online Tool for Quantification of Population Dynamics in Microbial Cocultures based on Autofluorescence Spectrometry**  
J. Stein<sup>1</sup>; I. Schlembach<sup>1</sup>; J. Kufs<sup>1</sup>; N. Schlosser<sup>1</sup>; M. Rosenbaum<sup>1</sup>; L. Regestein<sup>1</sup>; <sup>1</sup> Leibniz Institute for Natural Product Research and Infection Biology – Hans Knöll Institute (HKI), Jena/D
- 
- P 055 **Cell-free ATP regeneration from low cost substrate pyruvate enables efficient sn-glycerol-3-phosphate synthesis**  
F. Kraußner<sup>1</sup>; A. Hoff<sup>1</sup>; M. Hobusch<sup>1</sup>; E. Straube<sup>1</sup>; K. Rabe<sup>1</sup>; T. Walther<sup>1</sup>; <sup>1</sup> TU Dresden/D
- 
- P 057 **Optimization of astaxanthin recovery in the downstream process of Haematococcus pluvialis**  
I. Koopmann<sup>1</sup>; A. Labes<sup>1</sup>; A. Kramer<sup>1</sup>; <sup>1</sup> Flensburg University of Applied Sciences, Flensburg/D
- 
- P 058 **Biotechnological upcycling of plastics – Metabolic potential and opportunity for global warming reduction**  
T. Tiso<sup>1</sup>; R. Wei<sup>2</sup>; E. Pollet<sup>3</sup>; B. Winter<sup>4</sup>; N. Wierckx<sup>5</sup>; A. Bardow<sup>4</sup>; U. Bornscheuer<sup>2</sup>; J. Nogales<sup>6</sup>; L. Avérous<sup>7</sup>; W. Zimmermann<sup>8</sup>; L. Blank<sup>9</sup>; <sup>1</sup> RWTH Aachen, Aachen/D; <sup>2</sup> University of Greifswald, Greifswald/D; <sup>3</sup> CNRS/Strasbourg University, Strasbourg/F; <sup>4</sup> ETH Zürich, Zürich/CH; <sup>5</sup> Forschungszentrum Jülich, Jülich/D; <sup>6</sup> CSIC, Madrid/E; <sup>7</sup> CNRS/Strasbourg University, Strasbourg /F; <sup>8</sup> Leipzig University, Leipzig/D; <sup>9</sup> RWTH Aachen University, Aachen/D
- 
- P 061 **A comparative LCA of chemical and biocatalytic 2'3'-cGAMP synthesis**  
M. Becker<sup>1</sup>; A. Ziemińska-Stolarska<sup>2</sup>; S. Lütz<sup>1</sup>; K. Rosenthal<sup>1</sup>; <sup>1</sup> TU Dortmund/D; <sup>2</sup> Lodz University of Technology, Lodz/PL
- 
- P 062 **Improved and pressurized H-Cell reactor for electromethanogenesis**  
B. Röbber<sup>1</sup>; Y. Kim<sup>1</sup>; S. Off<sup>1</sup>; C. Frank<sup>1</sup>; H. Schaefer<sup>1</sup>; <sup>1</sup> HAW Hamburg/D
- 
- P 063 **Metabolic pathway for biosynthesis of (L)-2,4-dihydroxybutyric acid for the sustainable production of the methionine analogon HMTB**  
S. Nguyen<sup>1</sup>; N. Ihle<sup>1</sup>; C. Frazao<sup>1</sup>; T. Walther<sup>1</sup>; <sup>1</sup> Technical University Dresden/D
- 
- P 064 **Wastewater to Chemicals – Bioelectrochemical production of formic acid / formate on biological wastewater treatment plants**  
T. Lange<sup>1</sup>; I. Dinges<sup>2</sup>; M. Stöckel<sup>2</sup>; D. Holtmann<sup>1</sup>; <sup>1</sup> Technische Hochschule Mittelhessen (THM) - University of Applied Sciences, Gießen/D; <sup>2</sup> DECHEMA-Forschungsinstitut (DFI), Frankfurt am Main/D

## POSTER

- P 065 **Comparative rheometer investigations with model fluids for rheo-morphological studies with filamentous microorganisms**  
J. Lohr<sup>1</sup>; R. Hanke<sup>2</sup>; K. Hoffmann<sup>1</sup>; L. Fillaudeau<sup>3</sup>; J. Cescut<sup>4</sup>; J. Büchs<sup>2</sup>; R. Krull<sup>1</sup>;  
<sup>1</sup> TU Braunschweig/D; <sup>2</sup> RWTH Aachen Universität, Aachen/D; <sup>3</sup> TBI, Université de Toulouse, CNRS, INRAE, INSA, Toulouse/F; <sup>4</sup> TWB, Université de Toulouse, CNRS, INRA, INSA, Toulouse/F
- 
- P 066 **Improving Carbon Flux from Substrate to Product: Impact of Pathway Engineering on Microbial Production of Coniferyl Alcohol**  
A. Steinmann<sup>1</sup>; D. Malik<sup>1</sup>; K. Schullehner<sup>2</sup>; A. Kohl<sup>3</sup>; G. Hubmann<sup>1</sup>; S. Lütz<sup>1</sup>; <sup>1</sup> TU Dortmund/D; <sup>2</sup> Phytowelt GreenTechnologies GmbH, Cologne/D; <sup>3</sup> RWTH Aachen University, Aachen/D
- 
- P 067 **Metabolic Engineering of Cupriavidus necator H16 to exploit lipid de novo synthesis for OH-fatty acid ester production**  
R. Clerici<sup>1</sup>; H. Ballerstedt<sup>2</sup>; L. Blank<sup>2</sup>; <sup>1</sup> RTWH Aachen, Aachen/D; <sup>2</sup> RWTH Aachen University - Angewandte Mikrobiologie, Aachen/D
- 
- P 068 **Biopolymer gel electrolytes for zinc-based batteries**  
D. Lammers<sup>1</sup>; R. Heydorn<sup>1</sup>; J. Niebusch<sup>1</sup>; K. Dohnt<sup>2</sup>; R. Krull<sup>2</sup>; <sup>1</sup> TU Braunschweig/D
- 
- P 069 **Development of a robust method for online measurement of population dynamics in filamentous co-cultures**  
A. Palacio-Barrera<sup>1</sup>; I. Schlembach<sup>1</sup>; L. Regestein<sup>1</sup>; M. Finger<sup>2</sup>; J. Büchs<sup>2</sup>; M. Rosenbaum<sup>1</sup>;  
<sup>1</sup> Leibniz Institute for Natural Product Research and Infection Biology, Hans-Knöll-Institute, Jena/D; <sup>2</sup> RWTH Aachen University, Aachen/D
- 
- P 070 **Improving biochemical hydrolysis by bioaugmentation in plug-flow based reactors**  
T. Menzel<sup>1</sup>; S. Junne<sup>1</sup>; P. Neubauer<sup>1</sup>; <sup>1</sup> Technische Universität Berlin, Berlin/D
- 
- P 071 **What can early-stage environmental assessment contribute to the selection of synthesis routes?**  
K. Rosenthal<sup>1</sup>; M. Becker<sup>1</sup>; A. Ziemińska-Stolarska<sup>2</sup>; S. Lütz<sup>1</sup>; <sup>1</sup> TU Dortmund/D; <sup>2</sup> Łódź University of Technology, Łódź/PL
- 
- P 072 **Optimizing the growth of Pseudomonas taiwanensis VLB120 on D-xylose via the Weimberg pathway**  
P. Nerke<sup>1</sup>; J. Korb<sup>1</sup>; F. Haala<sup>1</sup>; G. Hubmann<sup>1</sup>; S. Lütz<sup>1</sup>; <sup>1</sup> TU Dortmund/D
- 
- P 074 **Analysis of municipal green waste as feedstock for electro-assisted fermentations with Clostridium acetobutylicum**  
M. Volkmar<sup>1</sup>; E. Bentz<sup>1</sup>; A. Langsdorf<sup>2</sup>; D. Holtmann<sup>2</sup>; R. Ulber<sup>1</sup>; <sup>1</sup> TU Kaiserslautern/D; <sup>2</sup> University of Applied Sciences Mittelhessen, Gießen/D
- 
- P 075 **A new multifunctional peptide tag as an alternative to the well-established His tag in recombinant protein purification and immobilization**  
T. Steegmüller<sup>1</sup>; S. Rauwolf<sup>1</sup>; S. Schwaminger<sup>1</sup>; S. Berensmeier<sup>1</sup>; <sup>1</sup> Technische Universität München Bioseparation Engineering Group, Garching/D



- P 077 **Power to gas: Impact of changes in H<sub>2</sub> supply on performance and microbial community composition of a biological methanation process**  
H. Khesali Aghtaei<sup>1</sup>; D. Benndorf<sup>1</sup>; U. Reichl<sup>1</sup>; <sup>1</sup> Max Planck Institute for Dynamics of Complex Technical Systems, Magdeburg, Germany and Otto von Guericke University Magdeburg/D
- 
- P 079 **The perforated ring flask – a non-baffled shaken bioreactor with superior gas-liquid mass transfer**  
S. Hansen<sup>1</sup>; <sup>1</sup> Evonik Operation GmbH, Marl/D
- 
- P 080 **Out of the dark into the light: Picking electrogenic microorganisms from the human intestinal microbiome**  
M. Mozafari<sup>1</sup>; P. Erfle<sup>1</sup>; J. Block<sup>1</sup>; A. Dietzel<sup>1</sup>; R. Krull<sup>1</sup>; <sup>1</sup> TU Braunschweig/D
- 
- P 081 **Towards Analysis of Hydrodynamics within Continuous Centrifugal Extraction using Computational Fluid Dynamics**  
S. Volpert<sup>1</sup>; F. Buthmann<sup>1</sup>; J. Koop<sup>1</sup>; G. Schembecker<sup>1</sup>; <sup>1</sup> TU Dortmund/D
- 
- P 082 **Recombinant antimicrobial peptide production as sustainable alternative**  
L. Michel<sup>1</sup>; A. Thoma<sup>1</sup>; M. Saeidi<sup>1</sup>; G. Cornelissen<sup>1</sup>; <sup>1</sup> HAW Hamburg/D
- 
- P 083 **Integrated processing meets scale-down**  
F. Mayer<sup>1</sup>; M. Cserjan-Puschmann<sup>1</sup>; C. Sam<sup>2</sup>; M. Soos<sup>3</sup>; G. Striedner<sup>1</sup>; <sup>1</sup> University of Natural Resources and Life Sciences, Vienna (BOKU), Vienna/A; <sup>2</sup> Boehringer Ingelheim RCV GmbH & Co KG, Vienna/A; <sup>3</sup> UCT Prague, Prague/CZ
- 
- P 084 **High cell density cultivation of *Corynebacterium glutamicum* with pH-coupled online feeding control for efficient conversion of acetate as alternative biotechnological carbon source**  
D. Kiefer<sup>1</sup>; M. Merkel<sup>1</sup>; L. Lilge<sup>1</sup>; M. Henkel<sup>1</sup>; R. Hausmann<sup>1</sup>; <sup>1</sup> University of Hohenheim, Stuttgart/D
- 
- P 085 **Secondary metabolite discovery in Bacteria is influenced by cultivation systems**  
A. Lindig<sup>1</sup>; G. Hubmann<sup>1</sup>; S. Lütz<sup>1</sup>; <sup>1</sup> TU Dortmund, Dortmund/D
- 
- P 086 **Investigating the Processing Potential of Ethiopian Agricultural Residue Enset/Ensete ventricosum for Biobutanol Production**  
N. Seid<sup>1</sup>; P. Griesheimer<sup>1</sup>; A. Neumann<sup>1</sup>; <sup>1</sup> Karlsruhe Institute of Technology, Karlsruhe /D
- 
- P 087 **Miniaturization of semi-continuous chromatography using 3D-printed microfluidic devices**  
C. Kortmann<sup>1</sup>; T. Habib<sup>1</sup>; D. Solle<sup>1</sup>; J. Bahnemann<sup>2</sup>; <sup>1</sup> Leibniz Universität Hannover/D; <sup>2</sup> Universität Augsburg/D
- 
- P 088 **Electro-stimulated yield enhancement of biotechnological expression platforms**  
A. Hämmerli<sup>1</sup>; L. Buchmann<sup>2</sup>; L. Neusch<sup>1</sup>; <sup>1</sup> ZHAW Zürcher Hochschule für Angewandte Wissenschaften, Wädenswil/CH; <sup>2</sup> Bühler AG, Uzwil/CH
- 
- P 089 **Development of a microfluidic system for controlled transient transfection of mammalian cells**  
M. Dehne<sup>1</sup>; A. Enders<sup>1</sup>; J. Bahnemann<sup>2</sup>; <sup>1</sup> Leibniz Universität Hannover / Institut für Technische Chemie, Hannover/D; <sup>2</sup> Universität Augsburg, Institut für Physik, Augsburg/D

## POSTER

- P 090 **Semi-continuous fermentation with *Parageobacillus thermoglucosidasius* DSM 6285 for H<sub>2</sub> production**  
M. Ardila<sup>1</sup>; A. Neumann<sup>1</sup>; H. Aliyu<sup>1</sup>; <sup>1</sup> Karlsruher Institut für Technologie, Karlsruhe/D
- 
- P 091 **Illuminating the hidden – analyzing heterogeneity in growth kinetics of cyanobacterial photo-biocatalysts in microfluidic droplets**  
P. Böhme<sup>1</sup>; <sup>1</sup> Helmholtz Centre for Environmental Research - UFZ, Leipzig/D
- 
- P 092 **Biotechnological production of natural colorants from Basidiomycota for industrial application**  
P. Bergmann<sup>1</sup>; M. Takenberg<sup>1</sup>; C. Frank<sup>1</sup>; F. Ersoy<sup>1</sup>; R. Berger<sup>1</sup>; <sup>1</sup> Leibniz University Hannover/D
- 
- P 094 **Co-factor engineering towards optimization of synthetic 2,4-dihydroxybutyric acid pathways**  
N. Ihle<sup>1</sup>; C. Remedios Frazao<sup>2</sup>; T. Walther<sup>1</sup>; <sup>1</sup> TU Dresden/D; <sup>2</sup> TU Dresden, ZINT, Dresden/D

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