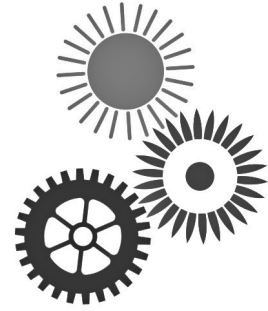


RRRB 2021
RENEWABLE RESOURCES & BIOREFINERIES



17th International Conference on
**Renewable Resources
and Biorefineries**

Biobased Solutions for Climate Change

6 - 8 September 2021

Aveiro, Portugal

RRB 2021 Organizing Committee

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Christian Stevens	Ghent University, Belgium
Philippe Tavernier	3PT Consult, Belgium
Erick Vandamme	Ghent University, Belgium
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Welcome to RRB 2021



Society in general and its consumers, as well as the industrial and agricultural production sectors, are now increasingly convinced that a switch from a fossil based economy towards one that is based on renewable resources has become imminent. This switch is essential to counteract the negative effects of climate change, air pollution, waste accumulation, dwindling fossil resources, and unreliable energy and power supply. In this context, sustainable development is crucial for the wellbeing of the next generations. Striving towards establishing a circular or reuse economy, increasingly based on using renewable resources, is a challenge for society, with science and technology being important to provide solutions. Interdisciplinary teams of scientists, engineers, biotechnologists and policymakers have to collaborate more intensively to adequately deal with these challenges.

Our series of RRB-conferences (now in its 17th edition) offer such an opportunity. Delegates from university, industry, governmental and non-governmental organizations will present their research and views on sustainable (green) chemistry, industrial biotechnology and on agricultural policy related to the use of renewable raw materials for non-food applications and energy supply. This will be presented in plenary and oral presentation sessions and poster tours. New research concepts but also new policies related to the circular bio-economy and the sustainable production of biochemicals and bio-materials will be discussed and exchanged with several industrial companies and vice versa.

The conference programme is organized in 3 parallel sessions and includes 2 keynote lectures, 13 invited lectures and 71 high quality oral presentations by international experts and PhD students, covering both scientific, technical and policy aspects of the bio-based economy.

From 6 to 8 September 2021, Aveiro, Portugal will host the 17th edition of the **International Conference on Renewable Resources and Biorefineries (RRB 2021)**.

We hope that this specialist forum for renewable resources, green chemistry, industrial biotechnology, and biorefineries will stimulate the transition from a fossil-based to a bio-based economy.

The sessions deal with these topics:

- Biobased and biodegradable materials
- Biocatalysis
- Bioenergy
- Biorefining
- Chemical platform molecules
- CO₂ capture and utilisation
- Food and agricultural wastes
- Horizon 2020/Horizon Europe
- Marine bio-economy
- Novel fermentation processes
- Nutrient recycling
- Polysaccharides
- Sustainability analysis
- Wood and forestry

Information on the preceding conferences can be found at: <https://rrbconference.com/programme-previous-editions/>

We wish you an instructive Conference and a pleasant stay in Aveiro!

The RRB 2021 Organizing Committee

Prof. Christian Stevens

Prof. Wim Soetaert

Ir. Philippe Tavernier

Em. Prof. Erick Vandamme

Prof. Ana Xavier

Prof. Luisa Serafim

Prof. Dmitry Evtyugin



Introduction to the Programme

This three-day international conference consists of 2 keynote lectures, 13 invited lectures and 71 oral presentations. Furthermore 2 poster tours are scheduled, one on Monday and one on Tuesday. For details about the poster tours, please see pages 20 - 25.

The conference takes place at the University of Aveiro, Santiago Campus. The floor plan of the campus is available on page 2.

The Opening and Closing Sessions will take place in the auditorium of building A, the rectory building.

The invited lectures and oral presentations are held in three conference rooms: rooms 1 and 2 in building B and room 3 in building C.

Posters will be on display on level -1 in building D. The authors of the posters are requested to be present at their posters during the poster tours.

The Biobased Market will take place in building A, the rectory building. The presentations will take place in the auditorium of building A and the Market will take place in the Senado Room of building A.

The abstract book contains the abstracts of the invited lectures, the oral presentations and the posters. A poster list per topic is also included.

The Organizing Committee does not take responsibility for factual or typographical errors found in the abstracts.

Poster and Awards for the Best PhD Talks

During the Conference, the Poster Jury will select the 3 Best Posters. These **3 Best Poster Awards** will be presented during the Conference Dinner on Tuesday, 7 September. The 3 winners will receive a book offered by Wiley. In addition, the winner of the 1st prize will also receive the **RRB Poster Award**.

Additionally, the **FEMS Best Poster Award** for the best poster in the field of microbiology will also be presented during the Conference Dinner on Tuesday, 7 September.

Finally, **Energies** also provides a Poster Award for the best poster dealing energy supply, conversion, dispatch and final usage.

There will also be Awards this year for the **3 Best PhD Talks**: the winners of these Awards will be announced during the Closing Session on Wednesday, 8 September. They will receive a book voucher offered by the **Royal Society of Chemistry**.



Photo Contest: The 9th Golden Crop Award

We have the pleasure to announce that there will be a Scientific Photo Contest at RRB 2021 again: the **9th GOLDEN CROP AWARD**.

Indeed, with the goal to associate Art to Science, 4A7, DO IT! organizes a photo contest which was open to researchers and PhD students with an oral communication or a poster at RRB 2021.

All photos will be on display during the Conference. Participants are invited to cast their vote for the Best Photo of 2021, by using the ballot paper they will find in their conference bag.

The winning photo will be presented with the **9th GOLDEN CROP AWARD**, an Extreme Sports Cam INTEMPO, wine offered by Sogrape, a famous family-owned wine company and a local specialty.

Additional Prize Draw

Furthermore, all participants casting a vote for the **9th Golden Crop Award** are offered the opportunity to deposit their business card in a special box: one lucky winner will receive wine offered by Sogrape and a local specialty.

The winners will be announced during the Closing Session on Wednesday, 8 September.

Special Issues

Manuscripts covering the latest and most promising results presented on RRB can be submitted to three special issues:

- **Industrial Crops and Products** edits our Conference special issue on cultivated plants (crops of industrial interest (non-food, non-feed))
- **Wood Research and Technology/Holzforschung** edits our Conference special issue on Wood topics
- **MDPI Energies Journal** edits our Conference special issue on results related to energy in one of the RRB conference topics

Authors can submit their article *free of charge* to the journal Industrial Crops and Products and the journal Wood Research and Technology/Holzforschung.

Energies offers a *30% discount* to all RRB registered participants who choose to submit manuscripts in this special issue 'Renewable Resources and Biorefineries 2021'.

Detailed information eg. on submission deadline and procedure, see at: <https://rrbconference.com/news/>



YOUR SAFETY IS OUR PRIORITY

Practical information – COVID measures at RRB 2021

In addition to the general measures taken by the University of Aveiro, the following additional measures are implemented:

Catering

Coffee/Drinks

The organization of proper coffee breaks is strictly forbidden by the Directorate-General of Health of the university. On showing their conference badge, participants will obtain a coffee (or other hot drink) in one of the coffee shops during the coffee breaks (see logos on the map on page 2). Drinks must be consumed in the coffee shops. Please note that participants will also receive a bottle of water/soft drink and a snack when they leave the meeting rooms for a coffee break.

Lunches

Lunches will take place in the canteen in Building D (see map on page 2). All participants will receive a lunch box (fish/meat/vegetarian dish, if ordered). All drinks and food will be provided in closed containers. Participants must eat their lunch in the canteen. It is forbidden to take your lunch outside.

Poster tours and poster viewing

The posters are on display on floor -1 in Building D. The total number of visitors of the posters and the circulation will be strictly monitored.

It is important to note that participants must wear their facial masks in the poster room. Eating and drinking is NOT allowed in the poster room.

As the number of visitors is limited the posters can be visited during these moments:

Monday, 6 September

12.00 – 13.30 hrs

14.30 – 16.00 hrs

Tuesday, 7 September

10.00 – 11.15 hrs

12.00 – 15.00 hrs

Wednesday, 8 September

10.00 – 11.30 hrs

The poster area will not be accessible on other moments.

There are two poster tours (see pages 20 - 25), one on Monday and one on Tuesday.

While the posters of Tour 1 are on display on the poster boards, the posters of Tour 2 will be available electronically.

While the posters of Tour 2 are on display on the poster boards, the posters of Tour 1 will be available electronically.



09.00 – 10.00	Registration	Auditorium, Building A
10.00 – 10.30	Official Opening of RRB 2021 Christian Stevens, Ghent University, BE Welcome to Aveiro Marçal Grilo President of the General Council of the UA, Former Minister of Education, Former Administrator of Gulbenkian Foundation, Former Consultant of the World Bank, Member of the Selection Board of ERASMUS MUNDUS Program, Member of the International Council of Higher Education Accreditation Opening Plenary Session Chair: Ana Xavier, Luisa Serafim and Dmitry Evtyugi, University of Aveiro, PT	
10.30 – 11.15	Keynote Lecture 1 Green Chemistry: The Molecular Mechanisms of Sustainability and the Circular Economy John C. Warner Senior Vice President, Chemistry, Distinguished Research Fellow, Green Chemistry & Sustainability, Zymergen Exploration and Discovery, Cambridge, MA, USA	
11.15 – 12.00	Keynote Lecture 2 Forest-based biorefineries: The pulp and paper industry challenges and opportunities João Lé Executive Director of The Navigator Company, Lisbon, Portugal, Chairman of the Board of Directors at Portucel Moçambique	
12.00 – 13.00	Lunch	Canteen, Building D

Monday, 6 September 2021

13.00 - 14.30 Parallel sessions

Room 1 - Session 1A	Room 2 - Session 1B	Room 3 - Session 1C
<p>Biobased and biodegradable materials I Chair: Alan Werker, Promiko, SE</p>	<p>Biocatalysis Chair: Rui Bezerra, University of Trás-os-Montes and Alto Douro, PT</p>	<p>Bioenergy Chair: João Coutinho, University of Aveiro, PT</p>
<p>13.00 – 13.30 Invited talk - Polyhydroxyalkanoates: The future of bioplastics? Paulo Lemos, UNL, PT</p>	<p>13.00 - 13.30 Invited talk - Microbial co-cultures: A promising approach to convert complex substrates Solange Mussatto, Technical University of Denmark, DK</p>	<p>13.00 – 13.30 Invited talk - Biomass, bioenergy and bioproducts – An integrated perspective for the pulp industry Gabriel Sousa, Altri, PT</p>
<p>13.30 – 13.50 Organocatalyzed ring-opening polymerization of regio-isomeric lactones: Reactivity and thermo-dynamics considerations Katrien Bernaerts, Aachen-Maastricht Institute for Biobased Materials (AMIBM), Maastricht University, NL</p>	<p>13.30 – 13.50 Closing the sequence to function gap for biomass deconstruction and conversion Nigel Mouncey, DOE Joint Genome Institute, Lawrence Berkeley National Laboratory, USA</p>	<p>13.30 – 13.50 Modelling new sustainable cropping systems for advanced biofuel production Andrea Parenti, University of Bologna, IT</p>
<p>13.50 – 14.10 Circular economy for bio-mass valorisation: Two successful case studies Valentina Beghetto, University Cà Foscari & Crossing Srl, IT</p>	<p>13.50 – 14.10 Engineering of cellobiose phosphorylase for the synthesis of prebiotic cellotriose Zorica Ubiparip, Ghent University, BE</p>	<p>13.50 – 14.10 Techno-economic and life cycle assessment of HTL biofuels from various feedstock Leonard Moser, Bauhaus Luftfahrt e.V., DE</p>
<p>14.10 – 14.30 The nitrogen value of biobased products from an integrated anaerobic digestion – centrifugation – evaporation process: From laboratory estimation to and field evaluation Hongzhen Luo, Ghent University, BE</p>	<p>14.10 – 14.30 Oleaginous yeast as cell factories Henrik Almqvist, Lund University, SE</p>	<p>14.10 – 14.30 A route towards alternative biofuels by hydrolysis of lignocellulosic waste streams in chloride molten salts Adriana Estrada Leon, Ghent University, BE</p>

14.30 – 15.30 Coffee Break and **Poster Tour 1**

Building D

15.30 – 17.00 Parallel sessions

Room 1 - Session 2A	Room 2 - Session 2B	Room 3 - Session 2C
<p>Biobased and biodegradable materials II Chair: Wim Soetaert, Ghent University, BE</p>	<p>Polysaccharides Chair: Pedro Fardim, KU Leuven, BE</p>	<p>Bioenergy II Chair: Juan Serna, University of Valladolid, ES</p>
<p>15.30 – 16.00 Natural halogen-free flame retardants for textiles Klaus Opwis, Deutsches Textilforschungszentrum Nord-West gGmbH, DE</p>	<p>15.30 – 16.00 Invited talk - Polysaccharide-based nanoparticles: Preparation, characterization, and application Thomas Heinze, Friedrich Schiller University Jena, DE</p>	<p>15.30 – 16.00 Production of biofuels and bioenergy from the organic fraction of municipal solid waste and refuse derived fuel Emile Redant, Renasci, BE</p>
<p>16.00 – 16.20 Bioplastics production through the sustainable valorisation of coffee wastes Joana Pereira, University of Aveiro, PT</p>	<p>16.00 – 16.20 Cellulose from agricultural side-stream biomass - Potential raw material for biobased manufactured textile fibre Birgit Bonefeld, Aarhus University, DK</p>	<p>16.00 – 16.20 Hydrodeoxygenation of fast pyrolysis bio-oil for refinery intermediate stream production Athanasios Dimitriadis, CERTH, GR</p>
<p>16.20 – 16.40 Biodegradable packaging from Chitinolytic fish wastes: The FISH4FISH Project Rebecca Pogni, University of Siena, IT</p>	<p>16.20 – 16.40 Improving polymerized lignin properties using green plasticizers Miguel Jimenez Bartolome, University of Natural Resources and Life Sciences Vienna, AT</p>	<p>16.20 – 16.40 Production and stabilization of bio-oil from straw via ablative cyclone pyrolysis and slurry hydrocracking Ann-Christine Johansson, RISE Energy Technology Center, SE</p>
<p>16.40 - 17.00 Phototrophic mixed culture for PHA production: Nutrient influence Miguel Palhas, UCIBIO-REQUIMTE, Universidade NOVA de Lisboa, PT</p>	<p>16.40 - 17.00 Semi-continuous and continuous production of xylo-oligosaccharides by combining biocatalysis and membrane technology Karina Lilibeth Ríos-Ríos, Université de Reims-Champagne-Ardenne, FR & Flemish Institute for Technological Research (VITO), Mol, BE</p>	<p>16.40 - 17.00 Exploring the synergy between carbon capture and utilization and microbial protein production for a more sustainable food chain Lotte Van Peteghem, Ghent University & Center for Advanced Process Technology for Urban Resource Recovery (CAPTURE), BE</p>

17.15 Biobased Market Presentations (see page 14)

18.15 Visit of the Market

19.30 Welcome Drink

Auditorium, Building A
Senado Room, Building A
Canteen, Building D



Presentations

Auditorium, Building A

- 17.15 Introduction
Prof. Chris Stevens, Ghent University and Mr. Pedro Bandeira, President of Investors Portugal
- 17.20 Pitch 1 by the Eco-lution team – BISC-E contest
- 17.25 Pitch 2 by the ProbioTeam – BISC-E contest
- 17.30 Pitch 3 on 'Circular economy of bioplastics' – BISC-E contest
- 17.35 Pitch 4 – BISC-E contest
- 17.40 Pro Natura
- 17.45 Agrifood byproducts for Materials Engineering
- 17.50 Crossing
- 17.55 EggshellenCe
- 18.00 Paralab
- 18.03 Sogrape
- 18.06 Announcement of the winner of the BISC-E contest

18.15 Visit of the Biobased Market

Senado Room, Building A

19.30 Welcome Drink

Canteen, Building D

Tuesday, 7 September 2021

09.00 - 10.30 Parallel sessions

Room 1 - Session 3A	Room 2 - Session 3B	Room 3 - Session 3C
<p>Nutrient Recycling Chair: Paulo Lemos, UNL, PT</p>	<p>Biorefining I Chair: Thomas Rosenau, BOKU University of Natural Resources and Life Sciences, Vienna, AT</p>	<p>Chemical platform molecules Chair: Michael Sauer, BOKU University of Natural Resources and Life Sciences, Vienna, AT</p>
<p>09.00 – 09.30 Invited talk - The circularity of the animal feed Tiago Aires, Soja de Portugal, PT</p>	<p>09.00 – 09.30 Yesterday's waste is today's colorant: Astaxanthin recovery from shrimp shells Filipa A. Vicente, National Institute of Chemistry, SI</p>	<p>09.00 – 09.30 Invited talk - Topochemical engineering of xylan: From biomass fractionation to fabrication of functional materials Pedro Fardim, KU Leuven, BE</p>
<p>09.30 – 09.50 Soluble sugars recovery and composition after enzymatic hydrolysis of fungal pretreated grape stalks Joana M.C. Fernandes, Universidade de Trás-os-Montes e Alto Douro, PT</p>	<p>09.30 – 09.50 From organic municipal solid waste to lactic acid using mixed cultures at pilot scale Paz Gómez, AINIA, ES</p>	<p>09.30 – 09.50 Microalgae valorization into volatile fatty acids: Optimum trade-off between archaeal and bacterial communities by tuning temperature Silvia Greses, IMDEA Energy, ES</p>
<p>09.50 – 10.10 Resource recovery and nutrient recycling from a green biorefinery residual stream Gossaye Tirunehe, Aarhus University, DK</p>	<p>09.50 – 10.10 The challenge around elution of chlorophylls from AmberLite™ HPR900 OH with ionic liquids Bárbara Vaz, University of Aveiro, PT</p>	<p>09.50 – 10.10 <i>Astragalus hamosus</i> saponins: Building blocks involved in a new therapeutic pathway for neurodegenerative diseases Khouloud Nafti, Université de Toulouse, FR & Université de Tunis EI MANAR, TN</p>
<p>10.10 – 10.30 Production of a mineral-nitrogen biobased fertiliser from digestate through full-scale membrane filtration Claudio Brienza, Ghent University, BE</p>	<p>10.10 – 10.30 Hydrothermal humification: Synthesis of soil-like humic acids via the hydrothermal carbonisation of miscanthus Aidan Mark Smith, Aarhus University, DK</p>	<p>10.10 – 10.30 Organic acids production through anaerobic co-digestion of sewage sludge and cheese whey María C. Veiga, University of A Coruña, ES</p>

10.30 – 11.15 Coffee Break and Visit of the Posters

Building D

11.15 - 12.45 Parallel sessions

Room 1 - Session 4A	Room 2 - Session 4B	Room 3 - Session 4C
Wood and forestry Chair: Carlos P. Neto, RAIZ Institute, PT	Food and agricultural wastes Chair: Armando Silvestre, University of Aveiro, PT	CO₂ capture and utilisation Chair: António A. Martins, University of Porto, PT
11.15 – 11.45 Invited talk - Sustainable textile production through innovative cellulose fiber production Herbert Sixta, Aalto University, SF	11.15 – 11.45 Invited talk - From beer to biopolymers Cristina Silva and Eliana Guarda, Superbock Group, PT	11.15 – 11.45 Invited talk - The green methanol economy: A wiser look to the future Adélio Mendes, FEUPorto, PT
11.45 – 12.05 A new species of fast-growing wood as a raw material for biorefinery: Implication for the kraft pulp production Dmitry Evtuguin, University of Aveiro, PT	11.45 – 12.05 Biorefining of berry processing by-products into food-grade ingredients for natural additives and nutraceuticals Petras Rimantas Venskutonis, Kaunas University of Technology, LT	11.45 – 12.05 Blending industrial blast furnace gas with H₂ enables <i>Acetobacterium woodii</i> to efficiently co-utilize CO, CO₂ and H₂ Stefan Pflügl, Technische Universität Wien, AT
12.05 – 12.25 Bioconversion of <i>Pinus pinaster</i> hemi-celluloses and cellulose into ethanol Cátia V.T. Mendes, University of Coimbra, PT	12.05 – 12.25 Developing value chains by cascading extractions from agro-industrial residues of legumes, fungi and coffee – Insights into the PROLIFIC project Annalisa Tassoni, University of Bologna, IT	12.05 – 12.25 Storing or utilizing biological CO₂ from a Norwegian paper mill, or no capture at all - Which is the best solution? Ingunn Saur Modahl, Norwegian Institute for Sustainability Research (NORSUS), NO
12.25 – 12.45 Bioethanol production from kraft pulp of <i>E. globulus</i> bark: Assessment of the performance of different strains Mariana Amândio, University of Coimbra & University of Aveiro, PT	12.25 – 12.45 Bioethanol production from globe artichoke post-harvest biomass by separate hydrolysis and co-fermentation with ethanologenic <i>Escherichia coli</i> Maria C. Fernandes, Centro de Biotecnologia Agrícola e Agro-Alimentar do Alentejo & MED - Mediterranean Institute for Agriculture, Environment and Development, PT	12.25 – 12.45 Storage of renewable energy carriers with carbon dioxide Sascha Kleiber, Graz University of Technology, AT

12.45 – 13.30 Lunch

Canteen, Building D

13.30 – 14.30 **Poster Tour 2** & Coffee Break

Building D

14.30 - 16.00 Parallel sessions

Room 1 - Session 5A	Room 2 - Session 5B	Room 3 - Session 5C
Sustainability analysis Chair : Philippe Tavernier, 3PT Consult, BE	Novel fermentation processes I Chair: Marília Mateus, IST/UL, PT	Horizon 2020/Horizon Europe Chair: Frederik Ronsse, Ghent University, BE
14.30 – 15.00 Invited talk - Renewable and non-renewable - When are resources greener and more sustainable Klaus Kümmerer, Leuphana University Lüneburg, DE	14.30 – 15.00 Invited Talk - Cell factories for bulk chemical production from industrial side streams Michael Sauer, BOKU University of Natural Resources and Life Sciences, AT	14.30 – 15.00 H2020 GLAMOUR: GLycerol to Aviation and Marine prOducts with sUustainable Recycling Vincenzo Spallina, University of Manchester, UK
15.00 – 15.20 The importance of considering emissions variability in environmental and sustainability analyses Eric Walling, Université Laval, CA	15.00 – 15.20 Valorization of agro-industrial wastes into bioproducts and bioenergy via non-conventional two-stage anaerobic process Cristina González-Fernández, IMDEA Energy, ES	15.00 – 15.20 Producing clean biofuels while remediating contaminated land: The CERESiS concept Athanasios Rentizelas, National Technical University of Athens, GR
15.20 – 15.40 Life cycle assessment of innovative renewable hydrocarbon transport fuels Nils Rettenmaier, IFEU – Institute for Energy and Environmental Research, DE	15.20 – 15.40 Biorefinery side streams valorisation, scenario of traditional biorefinery transformation into the integrated highly sustainable biorefinery Petra Ondrejčková, Centre of Research and Development, ENVIRAL a.s., SK	15.20 – 15.40 Advanced biomass catalytic conversion to middle distillates in molten salts (ABC-Salt) Frederik Ronsse, Ghent University, BE
15.40 - 16.00 Microplastics: How to prevent them in agronomic seeds? Rozenn Langlet, Université de Toulouse & BOIS VALOR, FR	15.40 – 16.00 An interdisciplinary -omics study to boost continuous bolaform sophorolipid production Sven Dierickx, Ghent University, BE	15.40 - 16.00 Effective desulphurisation for catalytic supercritical water gasification: The application and development of S-traps Hang Xiang, Paul Scherrer Institute (PSI), CH

16.15 Guided visit of the city (see page 123)

19.30 RRB Conference Dinner (see page 123)

Wednesday, 8 September 2021

09.00 – 10.30 Parallel sessions

Room 1 - Session 6A	Room 2 - Session 6B	Room 3 - Session 6C
<p>Biorefining II Chair: Ana Xavier, University of Aveiro, PT</p>	<p>Marine bio-economy I Chair: Maria Barbosa, Wageningen University, NL</p>	<p>Novel fermentation processes II Chair: Erick Vandamme, Ghent University, BE</p>
<p>09.00 – 09.30 Invited talk - Lignin analysis - A frequent bottleneck in biorefinery developments Thomas Rosenau, University of Natural Resources and Life Sciences (BOKU), AT</p>	<p>09.00 – 09.30 Invited talk - Allmicroalgae as a large-scale European microalgae producer: Potential and challenges Joana L. Silva, Allmicroalgae, PT</p>	<p>09.00 – 09.30 Biocatalysis for menthol derivatization with fatty acids in deep eutectic solvent Sabina Ion, University of Bucharest, RO</p>
<p>09.30 – 09.50 New demonstration scale platform for research and development in green biorefining Morten Ambye-Jensen, Aarhus University, DK</p>	<p>09.30 – 09.50 Comparative techno-economic and environmental sustainability assessment of the production of biodiesel from algae biomass via lipid extraction with hexane and limonene Santiago Zapata-Boada, University of Manchester, UK</p>	<p>09.30 – 09.50 Methane as sustainable biopolymer feedstock - Bioprocess engineering using methanotrophic bacteria Maximilian Lackner, Circe Biotechnologie GmbH, AT</p>
<p>09.50 – 10.10 Coculture fermentation for the production of propanol from glycerol Rémi Hocq, BOKU University of Natural Resources and Life Sciences, AT</p>	<p>09.50 – 10.10 Pyromar – Marine fuel blendstock from biobased waste Volker Heil, Fraunhofer UMSICHT, Oberhausen, DE</p>	<p>09.50 – 10.10 URBIOFIN, the demonstration of an integrated innovative biorefinery for the transformation of municipal solid waste into new biobased products Cristina García-Vera de Lope, Urbaser, ES</p>
<p>10.10 – 10.30 French pomegranate (<i>Punica granatum</i> L.): Juice pressing by-products exploration to predict valorization pathways Alexandra Lamotte, Université Fédérale de Toulouse Midi-Pyrénées, FR</p>	<p>10.10 – 10.30 Polyelectrolytes as precipitation agents of proteins to develop sustainable processes of purification Sónia Ventura, University of Aveiro, PT</p>	<p>10.10 – 10.30 Municipal green waste as feedstock for conventional and electro-assisted fermentations Marianne Volkmar, Technical University of Kaiserslautern, DE</p>

10.30 - 11.00 Coffee Break and Visit of the Posters

Building D

11.00 – 12.30 Parallel sessions

Room 1 - Session 7A	Room 2 - Session 7B	Room 3 - Session 7C
Biorefining III Chair: Luisa Serafim, University of Aveiro, PT	Marine bio-economy II Chair: Sónia Ventura, University of Aveiro, PT	Biobased & biodegradable materials III Chair: Chris Stevens, Ghent University, BE
11.00 – 11.30 Succinic acid production integrated into a biorefinery concept: Strategies to produce succinic acid using kraft pulp hydrolysates Ana Xavier, University of Aveiro, PT	11.00 – 11.30 Management of ship-generated food waste and sewage on the Baltic Sea Céline Vaneeckhaute, Université Laval, CA	11.00 – 11.30 Novel fully-recyclable bio-based thermoplastic materials Pilar Ruiz, University of Twente, Enschede, NL
11.30 – 11.50 Extraction of lignin from waste paper using a biobased LTTM Giorgio Tofani, University of Antwerp, BE & University of Pisa, IT	11.30 – 11.50 On the cultivation approach for PHB production by <i>Halomonas boliviensis</i> from residual macroalgal hydrolysates Maria Teresa Cesário, Universidade de Lisboa, PT	11.30 – 11.50 Biobased polyols from lab to market, opportunities & challenges of a young spin-off Coralie Jehanno, POLYKEY & University of the Basque Country UPV/EHU, ES
11.50 – 12.10 Effect of Y-zeolite acidity on the continuous catalytic cracking of bio-oil for producing hydrocarbons Beatriz Valle, University of the Basque Country (UPV/EHU), ES	11.50 – 12.10 Exploration of the biotechnological potential for microalgal production of natural polyphenols utilizing inorganic and organic substrates Polytimi Papavasileiou, University of Patras, GR	11.50 – 12.10 Thermosetting resins from vegetable oils and terpenes Federica Zaccheria, CNR SCITEC, IT
12.10 – 12.30 Ultrafiltration of deep eutectic solvent (DES) to recover lignin and purify the solvent Mari Kallioinen, LUT University, FI	12.10 – 12.30 Optimization of microalgal spray drying process Pedro M. Quelhas, Allmicroalgae Natural Products S.A. & Universidade do Porto, PT	12.10 – 12.30 Surface modification for the enhancement of the lignin polymerisation and functionalization using <i>Myceliophthora thermophila</i> laccase Sidhant Satya Prakash Padhi, Kompetenzzentrum Holz GmbH (Wood K plus) & University of Natural Resources and Life Sciences, AT

Closing Ceremony

Philippe Tavernier, 3PT Consult, BE

Auditorium, Building A

12.30 – 12.35 **Presentation of the 9th Golden Crop Award**

Chris Stevens, Ghent University, BE

12.35 – 12.45 **Presentation of the Awards for the Best PhD Talks**

Erick Vandamme, Ghent University, BE

12.45 – 12.55 **Closing Remarks and Presentation of the RRB 2022**

Philippe Tavernier, 3PT Consult, BE

13.00 **Farewell Lunch**

Canteen, Building D

14.30 – 17.15 Optional visits - Ecomare/ Aliança (see page 123)



Poster List – Poster Tour 1

While the posters of Tour 1 are on display on the poster boards, the posters of Tour 2 will be available electronically. While the posters of Tour 2 are on display on the poster boards, the posters of Tour 1 will be available electronically. See page 10 for details.

Biobased and biodegradable materials

- P1 Optimisation of xylitol fermentation by using *Candida boidinii***
Soma Bedő, A. Fehér, C. Fehér (HU)
- P2 Impact of wood-part as raw material and thermopressing parameters on volatile organic compounds emissions from biomaterials**
Elise Bertheau, V. Simon, C. Raynaud (FR)
- P3 Biobleaching of metals from secondary materials using glycolipid biosurfactants**
Martijn Georges Castelein, F. Verbruggen, L. van Renterghem, J. Spooren, L. Yurramendi., G. Du Laing, N. Boon, W. Soetaert, T. Hennebel, S. Roelants, A. Williamson (BE)
- P4 Cheese whey valorisation: Study of kefir production by kefir grains**
J. D'Ascensão, J. Pereira, L.S. Serafim, Ana M.R.B. Xavier (PT)
- P5 Volatile fatty acids production through acidogenic fermentation of brewer's spent grain using a two-stage process**
Eliana C. Guarda, A.C. Oliveira, S. Antunes, F. Freitas, P.M.L. Castro, A.F. Duque, M.A.M. Reis (PT)
- P6 A biorefinery approach for the simultaneous production of biofuels and bioplastics**
J. Ortigueira, T. Leite, J. Pereira, L.S. Serafim, C. Silva, P. Moura, Paulo Costa Lemos (PT)
- P7 Contribution of *Cupriavidus necator* to circular economy: Utilization of pinewood bio-oil**
A.B. Silva, J. Pereira, D.V. Evtuguin, P.C. Lemos, Luísa Seuanes Serafim (PT)
- P8 Sodium caseinate film modification to improve mechanical properties and water solubility**
Manon Kiesler, F. Prochazka, B. Bessaire, G. Assezat (FR)
- P9 CHEMONOSE+: Design of a 3D printed biosourced Pply Lactic Acetate inhaler stick for development of an Odor Kit dedicated to recovery of olfactory memory in chemobrain cognitive disorder**
Thierry Talou, M. Teissier, J. Haddou, A. Lebbat, M.C. Srour, D. Karampatsou, A. Miral (FR)
- P10 Rigid polyurethane foam cryogenic insulation obtained from sustainable feedstocks**
Mikelis Kirpluks, L. Vevere, R. Grube (LV)
- P11 Development and characterization of pullulan-apple fiber biocomposite films**
Ângelo Luís, A. Ramos, F. Domingues (PT)
- P12 Evaluation of the microbial roles on the production of PHA by mixed microbial cultures from spent coffee grounds**
Margarida Rosmaninho, Raquel Sousa, J. Pereira, S. Crognale, A.M.R.B. Xavier, P.C. Lemos, S. Rossetti, L.S. Serafim (IT & PT)
- P13 The application of 2,5-diformylfuran towards the synthesis of renewable lignin-based binder compositions**
Christoph Derflinger, G. Leitner, B. Kamm, C. Paulik, G. Meissner, H. Spod (DE & AT)
- P14 Michael donor monomer synthesis from tall oil fatty acids as raw materials for bio-based thermoset polymers**
Ralfs Pomilovskis, A. Fridrihsone, A. Abolins, M. Kirpluks (LV)
- P15 Production, characterization and optimization of whey protein films**
S. Pedro, L. Pereira, F. Domingues, A. Ramos, Ângelo Luís (PT)
- P16 Development of pullulan/cellulose/zein trilaminates for active food packaging**
Mariya Bilohan, A. Ramos, F. Domingues, Ângelo Luís (PT)



- P17 Valorisation of wine industry wastes through the production of polyhydroxyalkanoates by *Cupriavidus necator***
Bárbara Advinha, J. Pereira, P.C. Lemos, A.M.R.B. Xavier, L.S. Serafim (PT)
- P18 Depolymerisation of kraft-lignin towards high value-added products: Antioxidants and UV absorbers**
Gottfried Aufischer, B. Kamm, C. Paulik (AT)
- P19 The lactic acid bacteria *Weissella oryzae* on the examination stage for pure D(-)-lactic acid production in wood biorefinery**
Helene Aflenzer, A. Malashka, M. Egermeier, J. Dolinšek, V. Leitner (AT)
- P20 The quest for novel plastic degrading enzymes: Towards plastics upcycling**
Jo-Anne Verschoor, A.F.J. Ram, J.H. de Winde (NL)
- P21 Oxidative ammonolysis of technical lignins for agricultural utilization**
Gerhild K. Wurzer, H. Hettegger, R.H. Bischof, K. Fackler, A. Potthast, T. Rosenau (AT & FI)
- P22 Utilizing a wheat sidestream for 5-aminovalerate production in *Corynebacterium glutamicum***
Arthur Burgardt, C. Prell, V.F. Wendisch (DE)
- P23 Sustainable functional *Salvia*-based waterborne polyurethanes reinforced with cellulose nanocrystals**
Arantzazu Santamaria-Echart, I. Fernandes, L. Ugarte, F. Barreiro, M.A. Corcuera, A. Eceiza (PT)
- P24 Vegetal-based leather dyeing – A path for the Portuguese leather industry sustainability**
I.P. Fernandes, J.L. Henriques, M.L. Cruz, H.M. Rafael, J. Duarte, V.V. Pinto, M.J. Ferreira, Filomena Barreiro (PT)
- P25 Comparison between commercial cellulose and cellulose-rich material hydrogels formulated from ionogels**
Cynthia Hopson, V. Rigual, J.C. Domínguez, M.V. Alonso, J. García M. Oliet, F. Rodriguez (ES)
- P26 Seaweed potential for anaerobic digestion**
Iwona Cichowska-Kopczyńska, R. Aranowski (PL)
- P27 Influence of seaweed pre-treatment on anaerobic digestion**
R. Aranowski, Iwona Cichowska-Kopczyńska (PL)
- P28 Solid and liquid biomass- based activated carbon hybrid materials**
Ance Plavniece, G. Dobeles, A. Zhurinsk (LT)
- P29 Production of biomaterials from carrot pulp hydrolysis components**
Juan García-Serna, N. Bayoumy, M. Ramos-Andrés, A. López-Gil, D. Cantero, L.O. Salmazol, M. Á. Rodríguez-Pérez (ES)

Biocatalysis

- P30 Enzymatic production of xylo-oligosaccharides from wheat bran and their use as carbon source by probiotic bacteria**
Karina Lilith Ríos-Ríos, K. Vanbroekhoven, W. Dejonghe, H. Rakotoarivonina, C. Rémond (FR & BE)
- P31 An environmental perspective on the biocompatible pathways for the laccase-based production of value added oligorutin allowing enzyme reuse**
Abel Muñoz-Mouro, A.M. Ferreira, J.A. Coutinho, M.G. Freire, A.P.M. Tavares, P. Gullón, S. González-García, G. Eibes (ES)
- P32 Engineering of cellobiose phosphorylase for the synthesis of prebiotic cellotriose**
Zorica Ubiparip, D.S. Moreno, K. Beerens, T. Desmet (BE)
- P33 Enzymatic cascades towards a substituted tetrahydroisoquinoline starting with renewables**
Douglas Weber, L. de Souza Bastos, M. Winkler, D. Rother (DE & AT)



- P34 Novel systems for the production of polydopamine by biocatalysis**
A.F. Pereira, F.F. Magalhães, M.G. Freire, Ana Paula M. Tavares (PT)

Bioenergy

- P35 Pyrolytic oil upgrading by HDO with Pd/Nb₂O₅ and Pd/Fe/Nb₂O₅**
Mariana Myriam Campos Fraga, H. Hendrawidjaja, C. Carriel-Schmitt, K. Raffelt, N. Dahmen (DE)

Biorefining

- P36 Improving the sustainability of lactic acid downstream processing through process intensification**
Isabel Pazmiño Mayorga, A.A. Kiss, M. Jobson (UK)
- P37 Fractionation of pigments using liquid-liquid systems based on aqueous solutions of ionic liquids**
Margarida Martins, L.M. de Souza Mesquita, B.M.C. Vaz, A.C.R.V. Dias, M.A. Torres-Acosta, J.A.P. Coutinho, S.P.M. Ventura (PT, BR, UK & MX)
- P38 Hydrothermal treatment of Kraft black liquor for modification of organic constituents**
Silvia Maitz, M. Siebenhofer, M. Kienberger (AT)
- P39 The impact of populations on *Thermobacillus xylanilyticus* enzymatic production**
Romain Bouchat, C. Rémond, F. Delvigne, H. Rakotoarivonina (FR)
- P40 Shedding light on the citrate export of *Yarrowia lipolytica***
Anna Maria Erian, M. Egermeier, A. Rassinger, H. Marx, M. Sauer (AT)
- P41 Reactive extraction of lactic acid from sweet sorghum silage extract**
Paul Demmelmayer, M. Kienberger (AT)
- P42 Valorisation of apple pomace: Obtaining nutraceuticals and biofuels**
Inés Prado-Acebo, T.A. Lú-Chau, G. Eibes (ES)
- P43 Biochar produced from bio-refined grass fiber pulp for feed and technical purposes**
Andrej Saner, A.M. Smith, M. Ambye-Jensen, S.K. Jensen (DK)
- P44 Yesterday's waste is today's colorant: Astaxanthin recovery from shrimp shells**
Filipa A. Vicente, S.P.M. Ventura, A.C.R. V. Dias, M.A. Torres-Acosta, U. Novak, B. Likozara (SI, PT & UK)
- P45 High temperature extractive detoxification for deriving xylose rich sugar syrup from Kraft prehydrolysate**
Lukas Almhofer, R. H. Bischof, C. Paulik (AT)
- P46 Reclaiming the value of waste textiles: Chemical recycling of cotton waste textiles by acid hydrolysis**
Edvin Ruuth, M. Sanchis-Sebastiá, L. Stigsson, M. Galbe, B. Erdei, O. Wallberg (SE)



Poster List – Poster Tour 2

Biorefining

- P47 Microbial upgrading of a side stream from cellulose fiber production**
Robin Hoheneder, E. Fitz, R.H. Bischof, M. Sauer (AT)
- P48 Eutectic solvents as a way of obtaining the same proanthocyanidin extract from different sources**
Rodrigo T. Neto, S.A.O. Santos, J. Oliveira, A.J.D. Silvestre (PT)
- P49 Separation and purification of vanillic acid from a mixture of phenolic compounds present in lignin's oxidative depolymerization liquor using Aqueous Biphasic Systems (ABS) and Centrifugal Partition Chromatography (CPC)**
Inês L.D. Rocha, S.P.M. Ventura, J.A.P. Coutinho (PT)
- P50 Separation and purification of phenolic compounds present in lignin's oxidative depolymerization liquor using ARIZONA liquid biphasic systems and Centrifugal Partition Chromatography (CPC)**
Inês L.D. Rocha, O. Ferreira, S.P.M. Ventura, J.A.P. Coutinho (PT)
- P51 Effect of steam/ethanol ratio on ethanol steam reforming with a NiAl₂O₄ derived catalyst**
Sergio Iglesias, J. Valecillos, L. Landa, A. Remiro, J. Bilbao, A.G. Gayubo (ES)
- P52 UV-detoxification and lactic acid fermentation of spent sulphite liquor**
Tom Distler, S. Ginhör, K. Steiner, D. Aigner, G.M. Guebitz (AT)
- P53 Valorisation of mulberry leaves and alfalfa in green biorefinery approach**
Csaba Fehér, S. Bedő, A. Fehér, Sz. Kovács, M.G. Fári (HU)
- P54 Environmental assessment of biocommodities from biomass pyrolysis**
J. Senn, H. Keller, Guido Reinhardt, N. Rettenmaier (DE)
- P55 Aromatic valorization of Occitanian pulses flowers for development of bio-sourced fragrances: Case of acacia, mimosa, wisteria and broom**
Thierry Talou, A. Figue, Z. Abasse, S. Grivot, A. Miral, D. Nicolas, C. Raynaud (FR)
- P56 Carbon-negative production process of second-generation bioethanol from Typha biomass: An innovative pilot-scale integrated solution for waste water treatment and 2G biorefineries**
Raúl Piñero Hernanz, A. Lorenzo, J.M. Sanz (ES)
- P57 Speeding up lignin analysis directly from black liquors**
Nadine Kohlhuber, O. Musl, I. Sumerskii, I. Sulaeva, M. Löcker, A. Potthast (AT)
- P58 Flipping the autohydrolysis + ionic liquid pretreatment step to avoid lignin recondensation of pine wood**
Victoria Rigual, A. Ovejero, A. Ossa, J.C. Domínguez, M.V. Alonso, M. Oliet, F. Rodríguez (ES)
- P59 Characterisation of suberic acids and their potential in bio-polyol synthesis**
Daniela Godina, R. Makars, J. Rizhikovs, A. Paze, A. Abolins, M. Kirpluks (LV)

Chemical platform molecules

- P60 Selective extraction of xylose from acidic hydrolysate - From fundamentals to process**
Luca Ricciardi, W. Verboom, J.P. Lange, J. Huskens (NL)
- P61 *Pediococcus acidilactici* – Strain and cultivation optimization on softwood hydrolysate**
Joana Campos, J. Bao, O. Wallberg, G. Lidén (SE & CN)
- P62 Selective Ruthenium catalysts for the heterogeneous oxidation of 5-Hydroxymethylfurfural to 2,5-Diformylfuran**
Christoph Derflinger, B. Kamm, C. Paulik, G. Meissner, H. Spod (DE & AT)



- P63 Depolymerisation of lignin by Pt based catalysts obtaining sustainable bio-based compounds**
Raphaëla Süß, L. Zeilerbauer, B. Kamm, G. Meissner, H. Spod, C. Paulik (DE & AT)

CO₂ capture and utilization

- P64 Optimizing reaction conditions for the direct production of olefins from CO+CO₂ mixtures**
Ander Portillo, O. Parra, A. Ateka, J. Ereña, A.T. Aguayo, J. Bilbao (ES)
- P65 Using anoxygenic phototrophic bacteria for CO₂ capture and biopolymer production**
André Freches, J.R. Almeida, G.G. Farnocchia, J.C. Fradinho, M.A.M. Reis (PT)
- P66 Tailoring PHB/HV composition in *C. necator* H16 by targeted organic acid feed and limitation strategies**
Florian Gattermayr, L. Wazinger, K. Riffelsberger (AT)

Food and agricultural wastes

- P67 Soluble protein recovery and single cell protein production from a green biorefinery residuals stream**
Natália Hachow Motta dos Passos, P. Schultz, G. Weldegiorgis Tirunehe, M. Ambye-Jensen (DK)
- P68 Extraction and purification of RuBisCO from residual biomass**
Mafalda R. Almeida, A.I. Valente, A.M. Ferreira, M.G. Freire, A.P.M. Tavares (PT)
- P69 Essential oil from hemp flowers: A high-value derivative from a cultivation by-product**
Ylenia Pieracci, G. Flamini, L. Pistelli, F. Fulvio, R. Paris, L. Bassolino, M. Montanari, R. Ascrizzi (IT)
- P70 Exploiting green solvents for the valorization of chestnut shell waste**
Angelica Mero, E. Husanu, J. Gonzalez Rivera, A. Mezzetta, J. Cabrera Ruiz, C. Ferrari, E. Bramanti, F. D'Andrea, C.S. Pomelli, L. Guazzelli (IT)
- P71 Xylanases production by novel cellulomonas strains using lignocellulosic residues**
Csaba Fehér, S. Bedő, A. Fehér, O.M. Ontañon, E. Campos (HU & AR)
- P72 Concentration of natural dyes derived from *Rubia tinctorum* L. and *Reseda luteola*, by nanofiltration and their evaluation as a biorefinery feedstock**
T. Brás, I. Torrado, A. Escoto, Maria Conceição Fernandes (PT)
- P73 WASTE2FUNC: Lactic acid and biosurfactants sourced from sustainable agricultural and industrial (food) WASTE feedstocks as novel FUNCTIONal ingredients for consumer products**
Sofie Lodens, S.L.K.W Roelants, K. Maes, N. de Fooz, T. Derycke, M. Dewilde, S.L. De Maeseneire, W. Soetaert (BE)
- P74 New cosmetic ingredients from coffee silverskin**
Nicoletta Ravasio, F. Zaccheria, V. Pappalardo, C. Pirovanob, P. Valsesiab (IT)
- P75 Bioconversion of chestnut shells, an agro-industrial by-product, through enzymatic saccharification**
Paula Pinto, R.M.F. Bezerra, I. Fraga, C. Amaral, A. Sampaio, A.A. Dias (PT)

Horizon 2020/Horizon Europe

- P76 Catalytic hydrocracking of biomass tar to Benzene/Toluene/Xylenes (BTX) in a packed bed reactor under ambient pressure and green methanol synthesis for biodiesel production over membrane assisted catalytic methanol synthesis reactor**
A. Kostyniuk, M. Linec, D. Bajec, Filipa A. Vicente, B. Likozar (SI)
- P77 Towards the Baltic Non-Food Bioeconomy Centre of Excellence**
Ugis Cabulis, J. Rizikovs, A. Kokorevics (LV)

Marine bio-economy

- P78 Current state and potential valorisation of ship-generated organic waste in Quebec, Canada**
Céline Vaneeckhaute, O. Darveau (CA)



- P79 Eutectic mixtures on the recovery of bacterioruberin**
Mariam Kholany, N. Schaeffer, I.P.E. Macário, T. Veloso, T. Caetano, J.L. Pereira, S.P.M. Ventura, J.A.P. Coutinho (PT)
- P80 The potential behind bacterioruberin extraction and purification processes**
Bárbara M.C. Vaz, M. Kholany, I.P.E. Macário, T. Veloso, T. Caetano, J.L. Pereira, S.P.M. Ventura, J.A.P. Coutinho (PT)
- P81 Valorization of *Ulva lactuca* – Production of protein-rich ingredients for aquafeed and of bioplastics from different fractions of this macroalga**
T. Leandro, R. Shirley, B. Abreu, C. Rodrigues, R. Machado, M. Mateus, H. M. Pinheiro, M.M.R. da Fonseca, Maria Teresa Cesário (PT)
- P82 Saccharification of the green seaweed *Ulva lactuca* for bioplastic production by *Halomonas elongata***
T. Leandro, J. Dias, C. Rocha, M.M.R. da Fonseca, Maria Teresa Cesário (PT)

Novel fermentation processes

- P83 Acetate as platform substrate for fuel and chemical production with *E. coli***
Regina Kutsch, S. Pflügl (AT)
- P84 Product inhibition and pH affect stoichiometry and kinetics of chain elongating microbial communities in sequencing batch bioreactors**
Maximilienne Toetie Allaart, G.R. Stouten, D.Z. Sousa, R. Kleerebezem (NL)
- P85 Microbial 2-butanol production with *Lactobacillus diolivorans***
Hannes Rußmayer, H. Marx, M. Sauer (AT)
- P86 On-line NMR as a simple analytical toolkit for (bio-) process optimization**
Stephan Ginhör, M. Brandstetter, F. Gattermayr, B. Kamm (AT & DE)

Nutrient recycling

- P87 Optimizing nutrient recycling from composting through modelling**
Eric Walling, C. Vaneckhaute (CA)

Polysaccharides

- P88 Application of process lyes from the viscose process**
Takaaki Goto, S. Zaccaron, R. H. Bischof, K. Fackler, A. Potthast, T. Rosenau (AT & FI)

Sustainability analysis

- P89 Assessing the environmental impact of bio-based polyol production: Life cycle assessment**
Anda Fridrihsone, A. Āboliņš (LV)
- P90 Impact of the capacity market on the fuel structure and electricity prices in the power system in Poland**
Aleksandra Komorowska (PL)

Wood and forestry

- P91 Bioethanol production from eucalyptus bark kraft pulp: Process improvement by economical medium supplementation**
Manuel João Afecto Gonçalves, M.S.T. Amândio, J.M.S. Rocha, L.S. Serafi, A.M.R.B. Xavier (PT)
- P92 Valorisation of eucalyptus residual biomass: The potential of steam explosion pretreatment for production of cellulosic sugars**
Maria J. Mota, S.R. Pereira, R.J. Oliveira, B.F. Santos, B.I.G. Soares, P.C. Branco, A. Gaspar, P.C.R. Pinto (PT)