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**September 2022**

## ... Editorial

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Dear Readers,

Summer break is over, and the new academic year started in Europe. We are happy to share positive news with you!

The 5th International EPNOE Junior Scientist Meeting held in Aveiro in September was a great success. The program was superb, with the participation of more than 130 scientists from all over Europe. Dr. Marco Beaumont from BOKU, Austria, was awarded the EPNOE Junior Science Award. Junior scientists had an excellent forum to meet each other and to discuss their challenges and opportunities.

The 6th EPNOE Junior conference will take place in Vienna in 2024, and we are expecting even more participants than in Aveiro. We have the pleasure to announce that our plans to collaborate with scientific societies is moving forward at full speed. We recently agreed on a collaboration with European Chitin Society, ZELLCHEMING, and Asian Polymer Society. Our cooperation will involve joint organization of conferences, thematic sessions, and round tables throughout the coming year. These activities will complement our current cooperation with European Sustainable Energy Innovation Alliance (ESEIA), ISEKI-Food, Cellulose Society of Japan, and American Chemical Society.

The organisation of the EPNOE2023 Conference, in Graz, Austria, is proceeding smoothly. You will have the opportunity to enjoy an excellent and multifaceted programme covering science, innovation, and policy.

The EPNOE Research Roadmap 2040 is ready, and we are preparing a series of dissemination activities to communicate our vision about the precious contribution of polysaccharide scientists for a sustainable future.

Our mission is to connect people and organisations with a common goal, in order to enhance sustainability and preserve the health of both humans and the planet. We invite you to join us in this journey as a new EPNOE member.

Looking forward to meeting you in EPNOE.



Pedro Fardim  
President of EPNOE **us on**

Follow us on



## News & Announcements

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### 5<sup>th</sup> International EPNOE Junior Scientist Meeting 2022



The 5<sup>th</sup> International EPNOE Junior Scientist Meeting 2022, held from 8<sup>th</sup> to 9<sup>th</sup> of September 2022 at the University of Aveiro, Portugal, was the largest conference to date with more than 130 attendees from 20 different countries.

The organizers offered a two-day event with an excellent program comprising 2 plenary lectures, 9 keynote talks, 30 oral communications, 17 pitch communications and 63 posters contributions.

We congratulate Professor Marco Beaumont from BOKU University (Austria) for the EPNOE Young Scientist Award 2022.

EPNOE thanks the organizers who delivered such a splendid conference and to all the sponsors of the event (local sponsors: University of Aveiro and CICECO – Aveiro Institute of Materials; companies: The Navigator Company, Tecnosa, and Lenzing; and academic journals: Polysaccharides, Gels and Nanomaterials from MDPI).

We look forward to the next EPNOE Junior Scientist Meeting in 2024, which will take place in BOKU University, Vienna, Austria.

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EPNOE YOUNG SCIENTIST AWARD 2022

DR. MARCO BEAUMONT



### EPNOE Young Scientist Award 2022 goes to Dr. Marco Beaumont

Ass. Prof. Marco Beaumont from the University of Natural Resources and Life Sciences, Vienna (BOKU,

Austria) received the **EPNOE Young Scientist Award 2022** for his research on the chemistry of nanocellulose.

[More information](#)

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**WOOD**  
KPLUS

The **6<sup>th</sup> International EPNOE Junior Scientists Meeting 2024** will take place in Austria at the **University of Natural Resources and Life Sciences (BOKU) in Vienna** – a world-renowned city in the heart of Europe. The Institute of Chemistry of Renewable Resources will host this event together with the Institute of Wood Technology and Renewable Materials and Wood K plus.

The conference will take place at one of the BOKU sites directly in the City of Vienna. The venue can be reached easily from all over Europe with direct flights to Vienna International Airport and direct train connections to the city center within less than 20 min. Plenty of accommodations can be found in the City of Vienna.

Further information will soon be available on the [EPNOE website](#).

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 **SAPIENZA**  
UNIVERSITÀ DI ROMA  
DEPARTMENT OF CHEMISTRY AND TECHNOLOGIES OF DRUGS  
DEPARTMENT OF CHEMISTRY

 **epnoe**  
European Polysaccharide  
Network Of Excellence

 **universidade**  
de aveiro

**EPNOE WORKSHOP**

**POLYSACCHARIDES IN DRUG DELIVERY -  
ON THE ROAD TO INNOVATION!**

*FOR AGENDA AND MORE INFO: EPNOE.EU*

**ROME, SAPIENZA UNIVERSITY  
OCTOBER 27-28, 2022**

### **Workshop – Polysaccharides in drug delivery – On the road to innovation**

This workshop aims to bring together scientists involved in pharmaceutical applications of polysaccharides, to share experiences in this field, trying to reveal what's new behind the corner.

We will look at the use of polysaccharides as drug carriers in various fields, from vaccine delivery to topical applications, considering also their use as innovative excipients.

We will meet in the wonderful setting of the eternal city with its beautiful and intriguing places, **from October 27th to 28th 2022 at the Sapienza University in Rome.**

We have the following speakers lined up for you so far:

- Maria José Alonso (University of Santiago de Compostela)
- Elias Fattal (University of Paris-Saclay)
- Andreas Bernkop-Schnürch (University of Innsbruck)
- Nicola Tirelli (Italian Institute of Technology)
- José Kovensky (University of Amiens)
- Carsten Huettermann (IFF)
- Ivan Donati (University of Trieste)

We look forward to welcoming you in Rome!

More info and to register

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### 5th EU Starch Value Chain Conference



On 27-28 September, prof. Janusz Kapusniak – vice president of EPNOE – participated in the **5th EU Starch Value Chain Conference**, which was organized by StarchEurope in Rotterdam.

Prof. Kapusniak gave a lecture entitled "Soluble dextrin fiber - new functional carbohydrates from potato starch". Moreover, prof. Kapusniak introduced EPNOE and encouraged conference participants, representing the largest starch companies in Europe, to join EPNOE as industrial members.

More information about the conference and participating companies can be [on this website](#).

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### EPNOE SpringerBriefs in Biobased Polymers - Upcoming book in December 2022

***"Function-oriented bioengineered skin equivalents - continuous development towards complete skin replication"*** by Tanja Zidarič, Karin Stana Kleinschek, Uroš Maver, and Tina Maver.

This book is the first SpringerBrief published under the new agreement between EPNOE and Springer. It aims to provide a comprehensive summary of the available information on various *in vitro* skin models, starting from historical background to different modelling approaches and their applications.

Particular emphasis is placed on presenting the current technological components available for the development of engineered skin equivalents by summarizing advances in cell cultivation, materials science, and bioengineering.



Using examples of the current-state-of-art, this book describes the advantages, limitations, and challenges of developing *in vitro* skin models for successful use in clinical applications and skin-related research.

Rediscover the previous books in this series [here](#).

## Upcoming EPNOE webinars

### EPNOE Webinar

October 6<sup>th</sup> 2022, at 13:00 CET to 14:30 CET



Plenary lecture by **Prof. Már Másson**, Faculty of Pharmaceutical Sciences, School of Health Sciences, University of Iceland

"The antimicrobial structure-activity relationship for chitosan and derivatives."



Research lecture by **Vivien Nagy**, Faculty of Pharmaceutical Sciences, School of Health Sciences, University of Iceland

"Development of production method for a bioactive chitosan derivative."

Register for this webinar

Register for this webinar

Howdy, h

### EPNOE Webinar

November 10<sup>th</sup> 2022, at 13:00 CET to 14:30 CET



Plenary lecture by **Prof. Gleb Yakubov**, School of Biosciences, University of Nottingham

"Multi-scale Assembly of Plant Polysaccharides: Towards Resilient and Sustainable Food Systems for Healthy Diets"

**Research lecture to be confirmed**

Register for this webinar

**Next Webinar December 1st, 2022 (from 13:00 to 14:30 CET)**

## EPNOE Webinars in June



### "Career Boost for Young Researchers"

Special webinar in collaboration with COST Association, CESAER Association and KU Leuven Career Centre

Speakers:

- Mattias Björnmalin, CESAER Association
- Julian Sellinger, EPNOE Junior
- Nicole Wedell-von Leupoldt, KU Leuven Career Center
- Carlos A. García-González, COST Association and COST Aerogels

Moderator: Pasquale Del Gaudio

UNIVERSITÄT GRAZ



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September 17-22, 2023

# 8<sup>th</sup> International Polysaccharide Conference

Graz University of Technology  
Austria

<https://www.tugraz.at/events/epnoe2023>

- September 17:  
**Pre-conference** (students, young researchers)  
two simultaneous sections of choice:
  - Polysaccharide chemistry - mechanisms, analysis, products, or
  - From scientific ideas to entrepreneurship
- September 18-22:  
**Main EPNOE 2023** conference

More information



European Polysaccharide  
Network Of Excellence



European Commission

## European Partnerships in Horizon Europe

EPNOE is registered to be a partner in EU Horizon projects!

We offer dissemination and communication support services for European research and technological development projects related to bio-based and circular economy, and polysaccharides related fields in materials science & engineering, food & nutrition and biomedical applications.

We are registered on the EU funding & tender portal as: European Polysaccharide Network of Excellence (EPNOE Association).

[Click here for more details](#)

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**Events**

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## ESEIA International Conference 2022

**Topic:** Towards Climate Neutral Energy Communities

**Timing:** 2 – 3 November 2022

**Host:** The 5th ESEIA International Conference will be held at The Cyprus Institute in Nicosia, Cyprus.

**Programme overview:** In the face of a changing climate and increasing urbanisation, we need to accelerate our efforts to make cities more sustainable. The 5th ESEIA International Conference aims to provide a platform for exchanging ideas and insights on policies, planning approaches, technologies and actions related to low-carbon development. The conference will bring together experts from academia, research institutes and industry from all over the world for two days of keynote speeches, panel discussions, and other networking opportunities onsite and online. [Check out the programme for more information.](#)

### Key topics addressed:

- Climate change impact on energy needs and sources
- Distributed energy generation and storage, new systems, approaches and materials
- Sustainable heating and cooling
- Positive energy buildings and districts
- Embedded emissions and circular urban metabolism
- Community engagement, climate education, behavioural approaches and strategies, energy poverty
- Decarbonisation of local mobility systems
- Emerging nature-based solutions
- Green aesthetics and architecture
- Policy and finance mix for the achievement of climate-neutral communities

More information about the 5th ESEIA International Conference is available [here](#).

**Registration:** Registrations are open until 10 October 2022. To register, please contact: [eseia22@cyi.ac.cy](mailto:eseia22@cyi.ac.cy). The conference will be in English and the live stream is open to the public.

**Costs:** There is no participation fee, but registration is required.

### Contact:

- Conference Chair: Fabio Maria Montagnino, The Cyprus Institute, Cyprus: [f.montagnino@cyi.ac.cy](mailto:f.montagnino@cyi.ac.cy)
- ESEIA Team: [office@eseia.eu](mailto:office@eseia.eu)



## ISEKI E-Conference 2022

The e-conference will include both oral presentations and posters dedicated to topics regarding:



- Health and Nutrition
- Clean label ingredient innovation
- Food safety & Risk assessment
- Food packaging innovation
- Biotechnological approaches for sustainability
- Diversifying our protein sources
- Food quality and authenticity
- Consumer perception and market needs.

For more information

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Research

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**LARGE ATTENDANCE of the @NNgroupICMAB to the  
5<sup>th</sup> INTERNATIONAL SYMPOSIUM ON BACTERIAL CELLULOSE  
22-23 September 2022, JENA, Germany**

Click [here](#) for more information

- *Controlling BC morphology through a simple biosynthesis step*, Anna Laromaine
- *In vivo evaluation of bacterial cellulose for abdominal hernia repair and MRI monitoring*, Anna Roig
- *Conducting Bacterial Nanocellulose-Polypyrrole (BC-Ppy) scaffolds for cardiac tissue engineering*, Sumithra Srinivasan
- *Reinforced natural hydrogels of collagen and bacterial nanocellulose for 3D culture of mesenchymal stromal cells*, Nanthilde Malandain
- *Bacterial cellulose/ciprofloxacin for the potential treatment of the ocular surface*, Thomas Meslier

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Projects

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**Natural polymer reservoirs for the treatment of corneal pathologies (HEALTHY CORNEA)**

**Grant number:** 2021 PROD 00204

**Funding agency:** Generalitat de Catalunya, Government of Catalonia

**Start date:** October 2022

**End date:** April 2024

The cornea is the outermost part of the eye and is constantly exposed to physical, chemical, and biological stressors. Many pathologies require the administration of drugs, and those pharmaceuticals are delivered to the anterior segment of the eye via eye drops. However, the efficacy of an eye drop is limited due to its delivery on a small corneal area compared to the full

conjunctiva. In addition, after drop instillation, the tear turnover may reduce the half-life of a drug from 4 min to 40 sec. New eye administration routes with sustained drug release could solve some of the above-mentioned problems. The solution we propose is using bacterial cellulose, a natural polymer, as a reservoir for drugs for their sustained release. This polysaccharide is a soft hydrogel, inert to human metabolism, free of endotoxins, non-degradable, and has a high liquid holding capacity (>100 times its dry weight). The main objective of HEALTHY CORNEA is to create a reservoir for a sustained release of eye therapeutic agents.

### **Pectin hydrazide as a platform for modular structure and property design of biobased and sustainable materials and functional polymers.**

**Grant number:** 2220NR300X

**Funding agency:** Federal Ministry for Food and Agriculture, Agency for Renewable Resources

**Start date:** 01 September 2022

**End date:** 31 August 2025

The aim of the project is to develop sustainable value-adding strategies for a special group of polysaccharides, the pectins. In particular, technically feasible heterogeneous modifications are to be worked out, starting from an easily obtainable and inexpensive platform compound that can be chemically derivatized in a controlled, efficient and variable manner. Furthermore, the detailed structure elucidation of the products with modern analytical methods for the elaboration of structure-property relationships as well as the determination of technically interesting properties is an intrinsic part of the project.

### **Collaborative research Center 1278: Multifunctional nanoparticles based on polysaccharides for targeted drug delivery with two-step release behavior**

**Grant number:** SFB 1278/2

**Funding agency:** German Science Foundation

**Start date:** 01 July 2021

**End date:** 30 June 2025

**Link to project:** <https://www.polytarget.uni-jena.de/projekte/a02>

The overall goal of this project is to develop safe, polysaccharide-based and drug-loaded nanoparticles (NPs) with tissue-specificity that are suitable for clinical translation in inflammatory diseases. Recent results indicate that acetylation of proteins significantly affects the regulation of the immune system and cellular stress responses. Therefore, histone deacetylase inhibitors (HDACi) represent promising molecules to prevent or modulate inflammation- or infection-associated organ dysfunction. However, direct administration of HDACi is connected with low tissue-specificity as well as side effects. Polysaccharide-based expedient drug carriers have been studied in previous investigations. Importantly, a flexible drug carrier system for valproic acid (VPA), which shows rapid cellular uptake, excellent biocompatibility and HDACi-activity, was developed. Thus, VPA remains the primary HDACi of the project. However, to realize a two-step release kinetics, different HDACi will be covalently bound to the polysaccharide backbone via newly incorporated linkers. Potential linker structures include esters, thioesters, disulfides, and hydrazones that are cleaved under physiological conditions in living cells with different rates. Tissue-specificity of the carrier devices will be realized by functionalization with targeting moieties, e.g. dye molecules, specific peptides or antibodies, focusing on the targeting of liver or kidney. Liver and kidney dysfunction as a consequence of a dysregulated host response to infection are present in life threatening systemic syndromes, such as sepsis or haemolytic-uremic syndrome (HUS). To date, there is a lack of target-oriented organ-specific molecular therapies to improve organ function. As functionalization of polysaccharides with bulky substituents is challenging, polysaccharide derivatives bearing drug- and targeting moieties will additionally be synthesized separately and combined during the NP preparation (Figure A02-1). NPs will be analyzed with respect to cellular uptake, toxicity, biocompatibility and biological activity in state of the art in vitro models, including 2D and 3D liver and kidney cell-culture systems as well as real-time electric cell-substrate impedance sensing (ECIS). In a second step, cells will be subjected to pathogen associated molecular patterns (PAMPs), such as lipopolysaccharide (LPS) or Shiga toxin, followed by NP-treatment, to assess NP effects under pathologic conditions. The targeting strategies will be evaluated with regard to cell type-specific NP-delivery and enhanced drug release as well as efficacy in cells of interest. Promising HDACi-coupled NPs will be further characterized in vivo regarding their safety and their therapeutic potential in suitable disease models.

### **FunPolyGel \_ Preparation of Functional Polysaccharide Gels using Selective Synthesis Methods**

**Grant number:** FKZ 2220NR252X

**Funding agency:** Fachagentur Nachwachsende Rohstoffe e. V.

**Start date:** 1st of July 2021

**End date:** 31st of June 2024

**Link to project:** <https://www.polytarget.uni-jena.de/projekte/a02>

Within the project, innovative hydrogels and aerogels will be developed from polysaccharides that are of great importance in the German agriculture-, forestry-, and food sector (starch, cellulose, hemicelluloses). This will provide a valuable contribution to a sustainable valorization of renewable resources. Goal of the project is to develop novel modular methods for the preparation of polysaccharide based hydrogels and aerogels that will enable tailoring of the material properties and application potential. Novel polysaccharide derivatives with “complementary” reactive groups will be prepared using modular synthesis concepts. These groups can be converted with great efficiency, under mild reaction conditions (e.g., in water), and strictly chemoselective (i.e., exclusively with the corresponding “complementary counterpart”). The modular concept will be used to crosslink polysaccharides into defined 3D-networks and likewise to introduce functionalities that are of importance for the desired applications. Hydrogels will be obtained by selective crosslinking of reactive polysaccharide derivatives in water. They will be employed for specific applications or converted into aerogels using suitable drying techniques. The modular synthesis concept provides many possibilities to tune the material properties. Comprehensive structure property relationships will be established as basis for a rational material design. Thus, hydrogels and aerogels can be tailored for specific applications in biomedicine, environmental technologies, and agriculture. Fundamental aspects such as loading / release of active substances, selective absorption of pollutants, storage of water / nutrients, and biological properties (biocompatibility, biodegradability) will be studied.

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## Call for Papers

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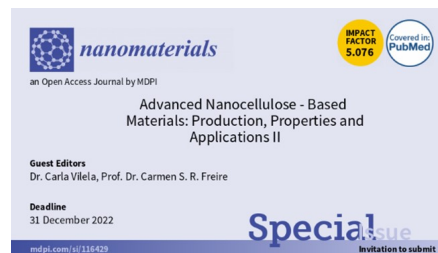
### Polymers | Submission Invitation to Special Issue of Polymers [IF 4.329] “Starch and Starch-Based Materials: Food and Non-Food Application”

Special Issue: Starch and Starch-Based Materials: Food and Non-Food Application

Guest Editors: Dr. Arkadiusz Zarksi; Dr. Sergiu Coseri; Prof. Dr. Janusz Kapusniak

Submission deadline: 31 October 2022

More info: [click here](#)

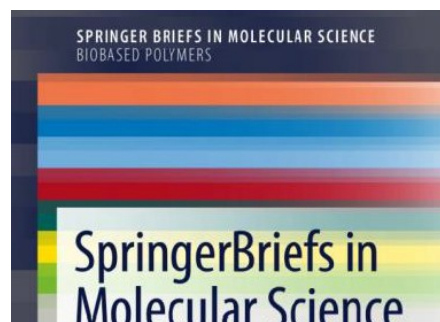


### Special Issue "Advanced Nanocellulose-Based Materials: Production, Properties and Applications II"

Special Issue Editors: Doctor Carla Vilela, Doctor Carmen S.R. Freire

Deadline: 31 December 2022

More info: [click here](#)

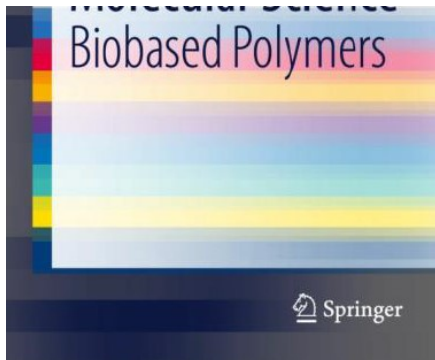


### Biobased Polymers

#### Subseries of SpringerBriefs in molecular science

Series Ed.: N. Le Moigne, L. Shen, M. Gericke, S. Spirk and R. Kargl

Published under the auspices of EPNOE\*, Springerbriefs in Biobased polymers covers all aspects of polysaccharide sciences, starting from their production and isolation from native sources (i.e. biosynthesis, genetics, agronomy, plant cell biology, biorefinery), over their characterization and processing (chemical / enzymatic



modification, shaping, biodegradation) to the many applications in which they are used (food & feed, materials & engineering, biomedical).

The focus of this book series lies on publications related to all kinds of native or synthetic polysaccharides, polysaccharide-derived polymers, and composites containing polysaccharides as a fundamental component. Moreover, topics related to natural fibres, wood, polysaccharide containing biomass and bioplastics, life cycle assessments are within the scope.

[More info click here](#)



## SpringerBriefs: Authored volumes

**Springer Briefs** are designed to get your ideas to market as fast as possible. They are concise summaries of cutting-edge research and practical applications across a wide spectrum of fields. Featuring compact volumes of 50 to 125 pages, each series covers a range of professional and academic topics. Briefs have a quick turnaround time and will be available as eBooks and MyCopy editions. Print editions have a softcover binding.

[More info click here](#)

### ...

## Education

*Welcome to new students and researchers*

**University of Jena - Germany.**

**New staff:**

- M. Sc. Lennart Skodda has started his PhD work in the field of polysaccharide-based nanoparticles for targeted controlled drug release for treatment of inflammation diseases. He is supervised by Thomas Heinze.

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## Open Positions

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- **Research Assistant / Associate in Biopolymers**

Newcastle University, to start in May 2023

We are seeking to hire a skilled, self-motivated Research Assistant/Associate to join the Research and Innovation team within the school of Engineering. You will be naturally collaborative and focused on conducting high-quality research to develop a series of biopolymer-based materials with tailored structures, properties and functionality, and advanced engineering processes based on 3D printing and producing such materials.

**Application deadline:** 6th Nov 2022

For more information please contact: [david.xie@newcastle.ac.uk](mailto:david.xie@newcastle.ac.uk)

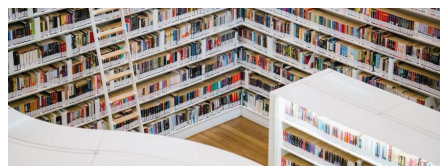
**Link to online job announcement:** <https://www.jobs.ac.uk/job/CTB564/research-assistant-associate-in-biopolymers>

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## Recent Scientific Publications of EPNOE Members

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