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POLYBIOSKIN

HIGH PERFORMANCE FUNCTIONAL BIO-BASED PRODUCTS IN THE BIOMEDICAL, COSMETIC, AND SANITARY SECTORS

PolyBioSkin aims to develop and validate pilot processes for producing prototypes of three globally significant, high performance, skin-contact products: femcare sanitary pads, diapers, beauty masks and wound dressings.

Project Coordinator
Simona Neri
IRIS
sneri@iris.cat

Communication Manager
Götz Ahrens
European Bioplastics e.V.
ahrens@european-bioplastics.org

For more data as well as updates on news and events:

▶ www.**polybioskin**.eu ◀

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Editorial

Dear Reader,

PolyBioSkin aspires to develop demonstrator applications in the cosmetics, personal hygiene, and biomedical sectors that are to a very large extent bio-based and also biodegradable in industrial composting conditions (according to EN 13432). The project aims to harness the unique biocompatibility features of biopolymers such as PLA and PHAs to produce baby diapers and femcare sanitary pads, facial beauty masks, and wound dressings, all of which require a very high degree of human skin compatibility. Additionally, the addition of biomolecules facilitating enhanced skin regeneration properties through innovative impregnation and nano-structuring technologies will be harnessed to provide valuable performance enhancements. Overall, the goal is to conceive competitive products that are more sustainable and technically superior while not jeopardising economic competitiveness.

In the past months, PolyBioSkin has progressed from the initial preparatory phase of the project – the specification of the target applications and selection of suitable bio-based materials – to the laboratory phase. Suitable biopolymer formulations for the production of bio-based sheets and fibres with predominantly bio-based content and suitable biodegradability properties have been determined, the processability of materials with the chosen methods such as electrospinning and dry impregnation has been established, and first samples were produced.

The consortium is now focussing on the implementation of the modification of biopolymer carriers with active molecules to achieve the desired antimicrobial, anti-inflammatory, and anti-oxidant properties, the production of the final demonstrator prototypes, and the scaling up of processes. The necessary preparations for the LCA assessment of the PolyBioSkin demonstrators have also been initiated, and the latest consortium meeting in Berlin has concretised the exploitation and dissemination needs and plans for all partners.

If you are interested in the objectives of PolyBioSkin, be it from an academic, business, or other perspective, and would like to closely follow the progress of the project and its outcomes, do not hesitate to contact us on polybioskin@iris.cat to receive further information and explore possible collaborations.

Best regards and enjoy the read,

The PolyBioSkin Team

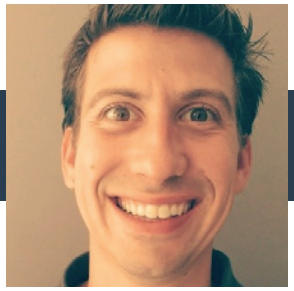
BIO-BASED INDUSTRIES Public-Private Partnership

Bio-based Industries Consortium

THIS PROJECT HAS RECEIVED FUNDING FROM THE BIO-BASED INDUSTRIES JOINT UNDERTAKING UNDER THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRAND AGREEMENT NUMBER 745839

Consortium Partner Interview: Vincent Bonin, Fibroline

In each PolyBioSkin newsletter we introduce one of the project's consortium partners through a short interview. Today, SME partner Fibroline will talk about their motivation for and involvement in PolyBioSkin.



Mr. Vincent Bonin
Project Manager Technical & Functional Textiles at Fibroline

Q: Vincent, would you like to introduce yourself and your department's key research focus?

A: *My name is Vincent Bonin, I am the Innovation Project Manager at Fibroline SA, an engineering company based near Lyon in France. I am materials engineer by training and have been working for Fibroline since 2003 when the company was created. Fibroline has developed new dry powder impregnation technologies and collaborates with its partners for the product development step in order to transfer innovative turnkey solutions. The department involved in the PolyBioSkin project is the functional textiles team.*

Q: How does this expertise and experience relate to the PolyBioSkin project?

A: *Fibroline knows the PolyBioSkin target markets (hygiene, cosmetics, and biomedical) very well, because the company has already been developing for and transferring technologies to these sectors for several years. In 2015, Fibroline, with its partner TWE, developed a new baby diaper absorbent core that is thinner and lighter, thus reducing waste, and providing better wearability. The PolyBioSkin biodegradable baby diaper with similar performance is the next step in this development.*

Q: What motivated you and your colleagues to join the PolyBioSkin project?

A: *The hygiene, cosmetics, and medical sectors are considered a priority for Fibroline, because in these markets innovation is a key priority and the main players are looking for technical advantages and novel products to outbid their competition. Fibroline enables the creation of new products with its cleantechs that perfectly fit with the objective of biodegradability.*

Q: What is your main role in the project?

A: *The role of Fibroline is to participate in the product developments thanks to its portfolio of technologies for the impregnation of bioactive powders into biodegradable substrates. The impregnated bioactive powders will give additional properties to the biodegradable substrates for skincare and wound care. Fibroline has various suitable types of equipment for the product developments from lab scale to pilot scale, helping to create the prototypes of the different PolyBioSkin target products.*

Q: What are, in your personal opinion, the key aims of the project?

A: *In my opinion, to make this project successful, the key aims of the project are to create prototypes and evaluate their performances and levels of biodegradability, aiming as high as possible. These proofs of concept will be a strong argument to commercialise these innovative solutions, and to transfer technologies and know-how to final producers for the different products developed during the PolyBioSkin project.*

Q: What stage is the project currently at?

A: *The project is at midterm and we have a better idea now about the specifications and the biomaterials compatibility with skin. The definition of the product configuration is ready and the scaling up is in preparation.*

Q: What do you think are the biggest benefits of bio-based biodegradable AHPs, wound dressings, and cosmetic beauty masks?

A: *The quantity of waste from these consumer goods is incredible and will increase as fast as the growth of the population and even more with the increase of living standards of emergent countries. We have to found solutions for the waste reduction and the biodegradability is one of them.*
However, the biodegradable should go with bio-based materials in order to take into account the reduction of fossil resources.

Q: What are, in your opinion, the biggest challenges when it comes to commercialising bio-based biodegradable AHPs, wound dressings, and cosmetic beauty masks?

A: *According to the discussions we have had with stakeholders and the tendencies and developments we observe, markets seem to be ready for the adoption of bio-based and biodegradability as potential high-value features. The biggest challenge is to maintain similar performances compared to existing conventional products or reaching even better characteristics.*

Q: Do you believe that we will see a transformational change towards more bio-based materials, and more sustainable production, consumption, and end-of-life management in the EU?

A: *Clearly. But, the products have to be of the same quality as the products currently offered on the market by big and established brand. Consumers especially in the wealthier parts of the world have strong brand loyalty habits and very high expectations towards products in these industries, and it is very difficult to change that.*

Q: What needs to happen outside of your research efforts to make the PolyBioSkin applications successful, e.g. in the area of standardisation, regulation, and policy?

A: *Yes, favourable regulation promoting bio-based and biodegradable products would certainly help the PolyBioSkin applications to be successful.*

Thank you!

News & Activities

PolyBioSkin researcher Maria Beatrice Coltelli awarded prestigious IAAM Scientist Medal

On August 22nd 2018, Maria Beatrice Coltelli, Assistant Professor at the Department of Civil and Industrial Engineering of The University of Pisa, Italy, has been awarded the Scientist Medal of the International Association of Advanced Materials (IAAM) during the IAAM award ceremony at the European Advanced Materials Congress 2018 in Stockholm. The award recognises the achievements of Professor Coltelli and her colleagues from the University of Pisa, of the Interuniversity National Consortium of Materials Science and Technology, and of PolyBioSkin partner MAVI, both also based in Italy, in their research on the use of nanoparticles in renewable materials for packaging and personal care applications. For more information, please contact the PolyBioSkin consortium on ahrens@european-bioplastics.org.

13th World Congress of the International Society of Cosmetic Dermatology (ISCD) co-hosted by PolyBioSkin partner MAVI

On 22-24 November 2018, the 13th ISCD World Congress will be taking place in Rome, Itlay. Professor Pierfrancesco Morganti, Managing Director of PolyBioSkin partner MAVI, is the President of the Congresse's Organising Committee. The first day of the congress will be dedicated to presenting the research activities and findings of PolyBioSkin to the international expert delegation of the Congress, providing a great opportunity to a wide array of potential adopters and partners. If you would like to find out more, please go to http://www.indercoswinter.org, or contact the PolyBioSkin consortium on ahrens@european-bioplastics.org.

PolyBioSkin at TERMIS World Congress in Kyoto, Japan

Luisa Trombi and colleagues from the PolyBioSkin partners University of Pisa (UNIPI), Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM), and MAVI Cosmetics delivered a poster entitled Nanochitin-nanolignin complexes to deliver bioactive molecules for skin regeneration at the 2018 TERMIS World Congress in Kyoto in September, one of the world's leading events for the dissemination of cutting edge research in tissue engineering and regenerative medicine. If you would like to review the poster, please contact the PolyBioSkin consortium on ahrens@european-bioplastics.org.

Prof. Morganti presents PolyBioSkin at Meeting of Chinese Dermatology Association

On occasion of the 24th Annual Meeting of Chinese Dermatology Association in June in Kunming, Prof. Pierfrancesco Morganti of PolyBioSkin partner MAVI Cosmetics presented the PolyBioSkin project to an international audience of dermatology experts. Prof. Morganti is recognised as an international expert in Chinese academic circles not least because of his tenure as a Visiting Professor at the Chinese Medical University in Shenyang. His talk was entitled Chitin & Lignin – Turning Food Waste into Cosmeceuticals, and if you would like to receive the abstract please contact the PolyBioSkin consortium on ahrens@european-bioplastics.org.

University of Ghent – MaTHc making with industry

On 31 May this year, the University of Ghent's Department of Materials, Textiles and Chemical Engineering (MaTCh) hosted a matchmaking with industry info day on which PolyBioSkin consortium member Prof. Karen de Clerck gave a talk on Electrospun nanofibre materials for advanced engineering applications. The event was complemented by a number of on-site visits of the laboratories of the department, where a PolyBioSkin poster was presented. Among the visitors were household brand names including the likes of Ontex, Milliken, TWE Group, or Sioen Industries, reflecting the high level of interest in the research conducted within PolyBioSkin and other R&D endeavours. To find out more, please contact the PolyBioSkin consortium on ahrens@european-bioplastics.org.

Next Activities

December
4 - 5 December 2018, Berlin, Germany
13th European Bioplastics Conference
https://www.european-bioplastics.org/events/eubp-conference/

6 - 7 December 2018, Berlin, Germany
Roundtable on Sustainable Biomaterials Annual Meeting 2018
https://rsb.org/2018-annual-meeting/

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February
12 - 13 February 2019, Gurugram, Delhi NCR, India
OUTLOOK India 2019
https://www.edana.org/education-events/conferences-and-symposia/event-detail/outlook-india-2019/

March
14 – 17 March 2019, Bologna, Italy
COSMOPROF Worldwide Bologna
http://www.cosmoprof.com

April
1 – 3 April 2019, Amsterdam, The Netherlands
World Bio Markets
https://www.biobasedworldnews.com/events/world-bio-markets

European Bioplastics Conference

On December 4th & 5th 2018, the 13th edition of the European Bioplastics Conference, hosted by PolyBioSkin consortium member European Bioplastics, is taking place in Berlin, bringing together over 350 attendees from around the globe.

The conference is the leading event of its kind in Europe and a great opportunity to meet decision makers and thought leaders from businesses across the entire bioplastics value chain, from public and private research centres, from the field of governance and policy making, as well as from regulatory bodies and non-governmental and civil society organisations. It is complemented by a co-located exhibition accessible to all delegates where the latest innovations from the industry will be showcased.

For more information visit
https://www.european-bioplastics.org/events/eubp-conference/,
or contact European Bioplastics directly on
conference@european-bioplastics.org.

Partner Project: STAR-ProBio - Sustainability Transition Assessment and Research of Bio-based Products

Summary of the research conducted on gaps and research demand for sustainability certification and standardisation in a sustainable Bio-Based Economy in the EU

STAR-ProBio is a 3-year BBI-funded Research and Innovation Action (Grant Agreement number 727740) dedicated to boosting the market uptake of bio-based products through improving and harmonising the standardisation, regulatory, and policy framework within which they compete.

During the first six months of project implementation, an analysis of the current status of sustainability certification, assessment schemes and standardisation in the bio-based economy has been conducted. The analysis revealed an impressive amount of existing certification frameworks, criteria, indicators and applicable standards, which cover a wide range of sustainability aspects. However, a number of principles and topics have not been so far adequately reflected in existing certification schemes and standardization activities (e.g. land use efficiency, indirect land use change, SO2-eq. emissions). In addition, a number of interviews stressed the importance of improving existing work instead of creating completely new criteria or even completely new certification. The reason for that is the actual operationalisation, application and implementation in certification practice, which seems to be carried out very differently between the existing frameworks. One of the most important roots for the existing differences can be found in the basic nature of the applied methodologies for criteria assessment. In practice, this can lead to differences in quality and price for the actual certification process.

In addition to these differences in the understanding, interpretation and implementation of sustainability criteria, there is also a need to harmonise legislation, because Europe's bio-based economy (BBE) is characterised by sectors with and without legally binding sustainability criteria. Those differences create issues like leakage effects and missing compatibility between the existing frameworks. To address these points, guidance for the practical implementation of tools for sustainability assessment is necessary. For the certification practice, it is important that it be simple, robust, transparent, clear and applicable even if just limited data and resources are available in order to create a reliable and trustworthy certification approach for the future EU BBE. Sustainability certification can be considered an important tool to implement targets regarding a sustainable development from the public or private sector and to increase and preserve the general societal acceptance of the BBE. Furthermore, sustainability assessment tools will allow providing evidence of the claimed environmental superiority of bio-based products, as requested by policy makers. Currently, some of the major sustainability issues related to advanced sectors of the BBE (e.g., the bioenergy sector) cannot be directly addressed with the existing sustainability certifications but have to be modelled. The introduction of (mandatory) sustainability criteria for all sectors of the BBE would help to create a level playing field and to reduce associated leakage effects.

The results of STAR-ProBio's gap analysis on European standardization activities around bio-based products can be classified in issues related to the standard EN 16751 Bio-based products - Sustainability criteria and issues beyond the scope of the standard. Major gaps of EN 16751 are related to the standard's specific scope that excludes the non-bio-based parts of products. Furthermore, experts highlighted that it cannot be used to make claims that operations or products are sustainable because it does not establish thresholds or limits. Other gaps in standardization activities include omisisons regarding ILUC, the consideration of different end-of-life options in sustainability assessment standards, the lack of sector-specific LCA standards as well as standards on life cycle issues beyond environmental impacts (e.g. regarding the social dimension). Another fundamental gap is linked to the lack of clear standards for facilitating the comparisons of bio-based and fossil-based products.

This work forms the foundation for the STAR-ProBio consortium to create a unified sustainability framework for bio-based industries to address the previously identified gaps and enable clear rules and methodologies, guide favourable regulation, and instil consumer confidence in bio-based products, effectively overcoming some of the key barriers to faster and more sweeping market success of the bioeconomy. This framework will be based on the adoption of specific life cycle methodologies and other indicators for environmental impact, social and techno-economic assessments, as well as consideration of ILUC, and will be supported through the analysis of industrial case-studies on bio-based polymers and fine chemicals, and their petroleum-derived counterparts.

For more information about STAR-ProBio, visit http://www.star-probio.eu, or contact the project consortium directly on projectmanager@star–probio.eu.

Partners of PolyBioSkin

Coordinated by IRIS from Spain, the PolyBioSkin consortium unites 12 European organizations, including universities and research centers, SMEs and the European Bioplastics industry association.

- Innovacio i Recerca Industrial i Sostenible
- Consortium for Science &Technology of Materials
- The University of Westminster
- Association for R&D of Industrial Processes and Methods
- Faculty of Technology Novi Sad
- Gent University
- Bioinicia
- Fibroline
- Texol
- Mavi Suc
- Exergy
- European Bioplastics