Bionanopolys

OITB NEWS NO. 1

CONTENT

FREE ACCESS TO THE BIONANOPOLYS SERVICE PORTFOLIO, A ONE-STOP-SHOP FOR INDUSTRIAL REQUIREMENTS

RAQUEL MORENO, AXIA INNOVATION

Are you a small company,
innovator or start-up lacking resources to develop and upscale your idea?

Are you a large organisation
that needs support for materials, processes, or product development?

By applying to any of the Bionanopolys services through the Open Call,

you can gain free access (under specific conditions) to support your innovation idea!

The **EU H2020 Bionanopolys OITB** project is developing an innovation ecosystem to stimulate innovations in the field of bio-based nanomaterials and polymer nanocomposites with high added value for different applications. The partners aim to develop a Single-Entry Point (SEP), the One-Stop Shop that you are looking for!

Bionanopolys offers a network of competence along the entire value chain, pooling resources and knowledge with more than 20 partners, from research, universities and industry, offering quality and state of the art services, to boost innovative developments.
Our service portfolio includes facilities, capabilities and services for technical developments, offered by 14 upgraded pilot lines, but also transversal technological services to reduce technical risks and barriers and a complimentary package to facilitate the commercial exploitation of the new developments, including enviRead more about our services on the following pages.

BIONANOPOLYS

MARKET SEGMENTS

Cosmetics

active ingredients: development of antimicrobial packaging to reduce preservatives

Functional food

nanocapsules, active agents: reduce preservatives and waste

BioNano Composites

flexible and rigid packaging (nanocomposites for biodegradable/ compostable packaging & consumer goods)

Food packaging

flexible and rigid packaging (nanocomposites for biodegradable/compostable packaging & consumer goods)

Textiles

threads, PPE, automotive, Agriculture (improve mechanical properties and sustainability)

Non-woven

wipes, Hygienic (improving control and bacteriostatic degradability)

Cellulosic fibres

reinforce composites, textile, hygiene, industrial application

Polymer foams

packaging, automotive (improved polymers performance: thermal, mechanical, sound insulation)

3D printing

prototyping, consumer goods (reduce cots and process downtime)

BIONANOPOLYS SERVICES

TECHNICAL COMPETENCIES

Nano-additives & raw materials
Bio-based nanomaterials
Nanocellulose (CNF, CNC)
Nanoligning, biodegradable and/or compostable block copolymer
Metallic nanoparticles, nanocapsules
Bionanocomposites

PROCESS PARAMETRIZATION

Quality control
Modelling for process optimization
Monitoring and quality in-line control
Simulation results

COMPLEMENTARY SERVICES, ROUTE TO MARKET

Biomaterial safety evaluations, food safety migration, LCA, LCC, techno-economic assessment, IPR management, business coaching, market analysis, regulatory and standards compliance, recyclability and compostability analysis.

Further details of our service portfolio are available in here
https://www.bionanopolys.eu/pilotplants

BIONANOPOLYS TECHNICAL COMPETENCIES

Through the Bionanopolys interactive online platform, to be released after the end of 2022, where potential users would be offered complete and transparent information about the facilities, capabilities and services provided by Bionanopolys OITB, including pricing structures and legal conditions.
Once the platform is operating, Bionanopolys will launch the Open Call, an invitation where you can request access to any of the services offered by Bionanopolys OITB, to test your novel ideas free of charge for you, for a limited time during project implementation, as it will be funded by the European Commission within the scope of the Bionanopolys project.

The Bionanopolys project will offer its resources with a maxim expenditure of 400.000 Euros from its budget, for the selected applicants testing their novel ideas through the Open Call.

WE EXPECT TO SUPPORT:

- **5 new cases of technical validations (pilot plants)**
- **5 new cases of feasibility studies (technology transfer, business and investment)**

To be eligible you must be established in an EU member state or associated countries as per H2020[1], request services in the field related to Bionanopolys scope and filling in an online application form in English. Guidelines will be provided to support the new customers, providing specific information regarding the evaluation criteria and selection process.

To know more and stay tuned with deadlines, please go to our website, register and follow us on Facebook, LinkedIn or Twitter, or subscribe to our newsletter.

[1] https://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2018-2020/annexes/h2020-wp1820-annex-a-countries-rules_en.pdf

USER VOICES

BIONANOPOLYS FOR PACKAGING INDUSTRY

WHAT IS NOVAMONT'S MISSION?

Novamont is a Benefit Company, certified B Corporation, world leader in the production of bioplastics and the development of biochemicals and bioproducts through the integration of chemistry, environment and agriculture. Novamont promotes a circular approach to bioeconomy based on the regeneration of local areas, building world-first plants based on proprietary technologies and revitalising industrial sites that are decommissioned or no longer competitive to create new industries, new products and new jobs. Novamont products provide solutions for specific environmental problems, such as soil and water pollution, while combining product quality and performance with an efficient use of resources.

WHERE DO YOU SEE CURRENT CHALLENGES THAT REQUIRE A MORE EFFICIENT OPEN INNOVATION PROCESS?

One of the main challenges Novamont is facing, with the aim of promoting circularity and waste reduction, is the valorisation of sub-products and scraps.
Within the logic of promoting open innovation and knowledge sharing, over the years our company has developed a highly interdisciplinary systemic approach in the field of bioeconomy, building bridges and interconnections with multiple actors in other sectors to accelerate the innovation process and the generation of new technologies.
Novamont has an extensive experience in the implementation and coordination of innovative research projects at European and national level, based on the valorisation of agro-industrial waste, the organic fraction of municipal solid waste, waste water (both urban and industrial), exhausted vegetable oil, bio- CO2 from fermentation, absorbent hygiene products.

WHAT IS YOUR BIONANOPOLYS USE CASE ABOUT?

Novamont's focus is to enhance the intrinsic value of biomaterials in order to explore their functional properties for packaging applications, given their higher circularity and better performances than fossil- based materials. Nano-enabled bio-based materials can be incorporated and used to increase the bio- based content and to improve biodegradability and sustainability.

WHICH SERVICES OF BIONANOPOLYS ARE RELEVANT FOR YOUR USE CASE AND WHY?

All the services are interesting and valuable, which is why we appreciate and recognize the opportunity given by Bionanopolys. The project assists the development of an industrial sector that is still growing and requires continuous innovation and scale up of technologies.
Given that these are very innovative materials, Novamont is particularly interested in the safety requirements service, which can help the company in the understanding on how different nano additives behave.

WHAT ARE THE BENEFITS OF THE BIONANOPOLYS OITB FROM YOUR PERSPECTIVE?

OITB can be a key tool in order to succeed in the ambitious objective posed by the European Commission to achieve a climate-neutral EU by 2050. In fact, by supporting the development of the bio- based sector, they can be a key factor in supporting climate protection, reduction of greenhouse gas emissions and saving of fossil resources.
This approach allow the interconnections between different stakeholders and the promotion of research and development in the bio-based sector, promoting the involvement of SMEs and start-ups.

NOVAMONT

Visit NOVAMONT Homepage:
https://www.novamont.com

SERVICES IN SPOTLIGHT

ORGANIC WASTE VALORIZATION AND UP-CYCLING

REGINA KRATZER, HARALD PICHLER, KATRIN WEINHANDL, ACIB GMBH

Wood residues, straw and further agricultural wastes based on lignocellulose are excellent raw materials for the production of bionanomaterials. The raw material is physically pretreated (steam explosion) and enzymatically hydrolyzed to release the valuable sugar building blocks. The hydrolysate is subsequently used as a feedstock in fermentation processes to produce for example PHA (polyhydroxyalkanoates) or PLA (polylactic acid). PHA and PLA are compostable plastics and thereby the circle closes.

We have focused on biomasses that are generally available in central Europe such as spruce, beech, pine but also used the productive energy crop giant china reed (Miscanthus giganteus). The giant china reed is one of the highest-yielding energy crops (10 - 20 tons dry mass per hectare and per year), and is currently used as fuel for energy production in biomass cogeneration plants, as building material or as animal bedding. The grass plant has a very high photosynthesis rate (coming along with CO2 consumption), especially under water shortage. It needs little fertilizer and can be compared with maize in terms of growth conditions. If we analyze the plant for its sugar components, we obtain about 40.4% glucan, 27% lignin, 20.2% xylan and small amounts of acetate, arabinan, galactan and mannan.
In order to extract the desired sugar molecules from the recalcitrant lignocellulose material, it is pressurized with steam (up to 10 atm) and the pressure is then immediately released (steam explosion). This pre-treatment loosens the cell wall structure and makes it more accessible for the degrading enzymes (enzyme cocktail containing cellulases). Remaining solids (mainly lignin) are separated and the hydrolysate is used without further treatment.

The obtained hydrolysates can then be used as feedstock for microorganisms in diverse fermentation processes. For example, in the cultivation of the natural PHB-producing bacterium Cupriavidus necator. Furthermore, for the production of Lactobacillus species (e.g. Lactobacillus brevis, Lactobacillus pentosus) and also the well-known yeast Saccharomyces cerevisiae that metabolize glucose and xylose into lactic acid. As polymers, both PHB and PLA are valuable alternatives to conventional plastic polymers with mechanical properties similar to polypropylene.

They are temperature-resistant and are suitable for application in packaging materials, cosmetics or medical products.
As a research group in acib and embedded in the Institute of Biotechnology and Bioprocess Engineering at Graz University of Technology, the Bionanopolys team around Prof. Dr. Regina Kratzer and Prof. Dr. Harald Pichler pursues an integrated scientific-technical approach that combines modern methods of molecular and process biotechnology to achieve innovative solutions for efficient bioprocess development.

BUSINESS ADVISOR

ESSENTIALS FOR A BUSINESS PLAN,

DOING A BUSINESS MODEL CANVAS

NATALIA COSTANZO, EBAN

During the two-part webinar on Business Model Canvas organised by EBAN (European Business Angels Network), Zdenek Fred Fous, co-founder of Encubate, explained how to work with this effective tool to design or adjust a company's business model.

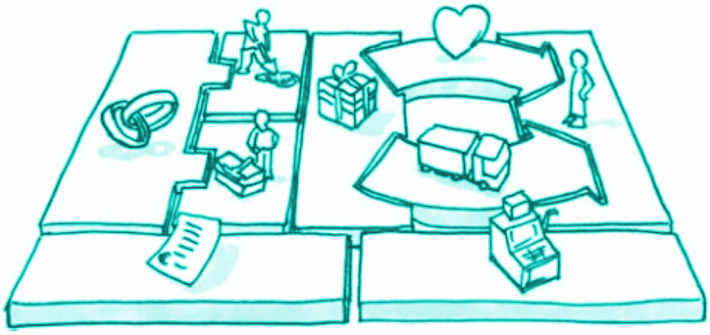
Business Model Canvas was introduced in 2004 by Dr. Osterwalder and Prof. Pigneur and it is one of the most popular tools for analysing and visualising business models. It is useful because, unlike the long business plans, it allows to focus on certain important aspects of the business model in only one organised, clear and efficient page. It also gives emphasis on the customer, rather than the product or service, and it reduces the risk of failure, thanks to the clear connections between the different elements that give greater visibility on the risks.

To fill in the Business Model Canvas, you should start by answering to the question "do customers want our product/service?". This is the desirability part and is formed by Customer Segments, Value Proposition, Channels and Customer Relationships. Then, you can address the issue "how do we make money?", by filling the revenues streams section. Once understood where the revenues come from, it is necessary to consider whether it is possible to deliver the product/service. This is the feasibility part and is formed by Key Activities, Key Resources and Key Partners. Finally, you should define the cost structure for these activities, resources and partners. Revenue Streams and Cost Structure make up the viability part of the canvas, that answers to the question "what is it worth?". This is the recommended order to follow especially at the beginning and it is logical. Customer Segments are the first element that need to be identified because they are the ones for whom you are creating value. Without the customers, generating revenue or not, the business model cannot work. Once the customer segments are identified, it is important to think with them about the Value Proposition, writing 1 or 2 sentences maximum on the problems you are solving, rather than the product/service and its special features. This way, you will avoid having a value proposition that is important only internally and not for the customers.

To deliver the Value Proposition, you need Distribution Channels and Customer Relationships across the whole journey: from awareness, to evaluation, to purchase, to

distribution, to post purchase support. After the pandemic, in person channels are viable again and they are often much more effective than an online meeting – even though you need to remember your business card. To find out-of-the-box Channels that could work, you brainstorm at least 30 different ones with your team.

If the Customers agree with your Value Proposition and the Channels and Relationships to deliver it with, they will contribute to your Revenue Streams. However, the Business Model Canvas, is a simplification and here we could just specify in which percentage we expect each revenue stream to contribute to the overall revenues and check where the largest chunk is coming from.
To deliver the Value Proposition, maintain Distribution Channels, cultivate Customer Relationships and manage Revenue Streams, Key Activities and Key Resources need to be identified. Key activities differ from the Value Proposition as they are much more operational and less unique. For some of the activities and resources, though, you will need the support of Key Partners that are able to produce higher quality at a lower price. Activities and Resources also generate Costs and it is necessary to understand if they are aligned with the Value Proposition. In particular, if there is a cost-driven structure, the company is providing a low-cost service and will minimise costs while operating the business. If there is a value-driven structure, the customer will pay more, but the price reflects also higher costs for the company.
Once this logic has been followed at the beginning, then, it is possible to go back and forth to adjust it. As a matter of fact, to work properly, the Business Model Canvas should be revised multiple times. In particular, it should be shown to as many customers and partners as possible. A Business Model Canvas is right when customers agree with the Value Proposition or partners agree with what they can do. If they don't find it right, you need to revise it. This will be necessary especially if the company is at an early stage.
These are only some of the insights shared by Fred during the webinar. To know more, you can watch the recordings at the following links: https://www.eban.org/bionanopolys-business-model-canvas/



The professionalisation of entrepreneurs has always been one of EBAN's priorities. EBAN is the pan-European representative for the early-stage investor community, representing a sector estimated to invest 7.5 billion Euros a year and playing a vital role in Europe's future, notably in the funding of SMEs. It is common knowledge that to have a fully performing market we need an entrepreneurial community with great potential and an enabling ecosystem. It is therefore in the interest of investors and of EBAN to contribute to a developed entrepreneurial community and to advancing the investment readiness of start-ups as well as dealing with governments to influence public policy. For this, EBAN relies on a pool of business angels as trainers, all of whom are successful entrepreneurs who share first-hand knowledge both on making investments and on setting up and growing companies.

GET TO KNOW OUR NETWORK

INITIATING AND COORDINATING BIONANOPOLYS OITB

CARMEN SÁNCHEZ, TECHNICAL DIRECTOR & BIONANOPOLYS' COORDINATOR

ITENE research centre has been developing technological solutions through R&D for 28 years, especially in the field of packaging, where we develop materials and technologies for the circular economy and work on their safety, design and functionality. R&D represents more than 87% of our activity, which is reflected in research projects in Spain and internationally, where we participate in multiple European projects.

One of them is the BIONANOPOLYS project, of which we are coordinators. ITENE saw the great opportunity of being part of the project because of the great contribution that it meant to enter into the research and scaling up of innovative bionanocomposites from renewable raw materials of sustainable origin, as well as bio-based nanoproducts for different industrial sectors.

In addition, this project also gives us the opportunity to interact and exchange knowledge and experiences with our partners, no less than 26 other companies and research centres, with whom we are working together to transform and develop an Open Innovation Test Bed (OITB). With the constitution of the single-entry-point (SEP) we will fulfil the main objective of this project: to create legal entities to bring services and technological capabilities to companies, while promoting networking and collaboration between the agents involved. Moreover, it is a legal entity that will have continuity over time and will continue after the project ends.

The SEP makes this project different from others. It is not a typical R&D project, as the constitution of a new single-entry-point model that is viable beyond the end of the project is a "go-no-go". The commitment of the core-partners is essential because otherwise, the purpose of this project will be lost. Consequently, I hope that we will all meet the deadlines and that the single-entry point will come to a successful implementation.

Through the open call, which will be launched in February 2023, European companies will be able to apply for these services and to test, scale up and incorporate into their business lines biobased materials with nanoparticles that contribute to the transition towards the circular economy.

While preparing this launch, we are demonstrating the technical performance of the pilot plants through twenty-one case studies involving seven key industrial players: Novamont (reinforced polymers for packaging), Ambrosialab (cosmetics and functional ingredients), Textisol (textile and non-woven), DANIPACK (Flexible food packaging), DS Smith (packaging paper applications), CELLMAT (foamed packaging products and lightweighting structural parts) Logoplaste (rigid packaging), and HTSA (agricultural synthetic fibres).

ITENE is part of 9 of the 14 pilot plants working to support especially small and medium-sized companies that otherwise would not have the necessary infrastructure to develop these new bionanomaterials and, in addition, to ensure not only an efficient production process, but also that they have the desired properties for their safe use -that is, taking into account the safety of workers exposed to them during the manufacture of products or taking into account environmental and regulatory aspects-, which is another of the areas of expertise in

which we work in our research centre.

For our part, at BIONANOPOLYS we put all our capabilities and experience in nanotechnology and in the development of new sustainable and advanced materials. Along with this, we deploy our experience in the participation and leadership of R&D projects at European level. In fact, since 2008, we have taken part in more than 100 projects funded by the European Union, of which we are or have been coordinators of 17 of them.

These are large-scale projects with a large number of partners in which, as in the case of BIONANOPOLYS, we have also contributed with our infrastructures. In the case of this project, we contributed our "fab lab", in which we develop and process materials in laboratory and pilot scale packaging, which we validate in order to bring them to market.

In all these tasks, we always take a holistic view of the entire packaging value chain, i.e., we consider everything from the materials and their design to their management and end of life. And, of course, we always bear in mind its applicability in the market and its transfer to the companies, with which ITENE -with more than 1,600 client companies in the period 2018-2021- has a close collaboration.

CENTRO TECNOLÓGICO ITENE

Visit ITENES Homepage:
https://www.itene.com

LET'S MEET & INTERACT

MEET THE PROJECT
7th NOVEMBER 2022, VIRTUAL EVENT,
BIOREFINE CLUSTER EUROPE

THE GREENER MANUFACTURING SHOW
9th – 10th NOVEMBER 2022,
COLOGNE, GERMANY

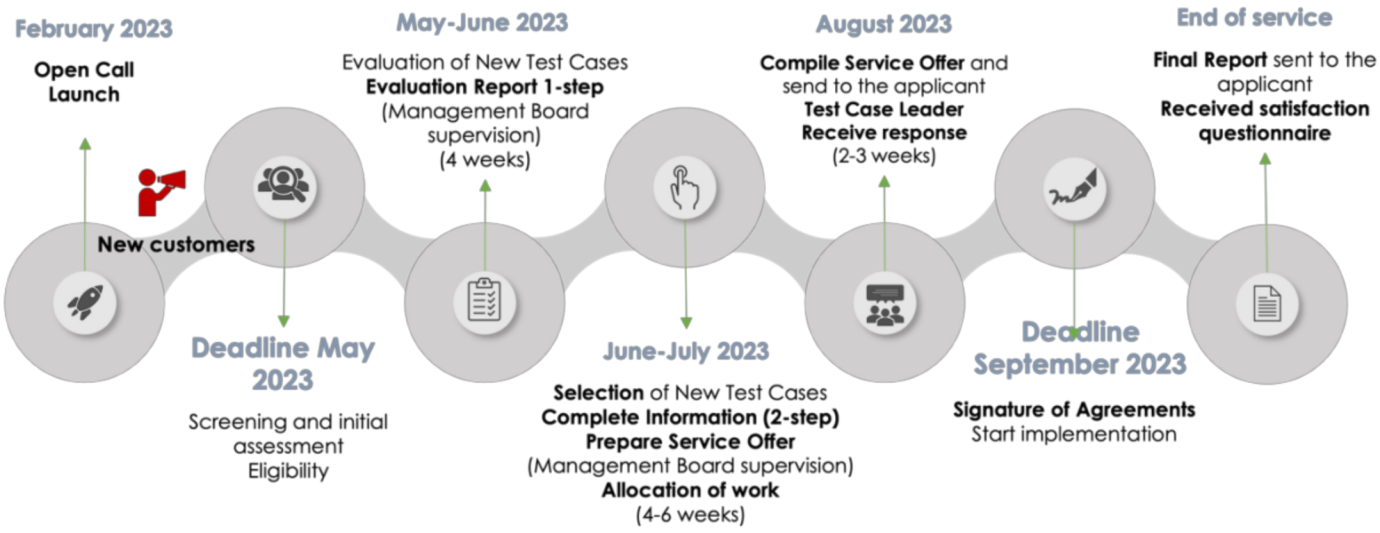
EUROPEAN SUMMIT OF INDUSTRIAL BIOTECHNOLOGY
14th – 16th NOVEMBER 2022, GRAZ, AUSTRIA

NANOSMAT MEDITERRANEAN
15th – 17th NOVEMBER 2022
AGADIR, MOROCCO

EUROPEAN COATINGS SHOW & CONFERENCE
28th – 30th MARCH 2023, NÜRNBERG, GERMANY

BE PREPARED FOR THE OPEN CALL

IN FEBRURAY 2023



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