Bionanopolys

OITB NEWS NO. 3

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THE SIX COMPANIES SELECTED IN THE BIONANOPOLYS OPEN CALL GAIN ACCESS TO THE OITB'S SERVICES.

ÀNGELS ALMENAR, BIONANOPOLYS SINGLE-ENTRY-POINT COORDINATOR

It is a pleasure to share the latest news on the BioNanoPolys project, in which we have been working tirelessly to promote innovation in bio-based nanomaterials. A significant step has been taken this September with the start of the implementation of the six projects selected in the Open Call.

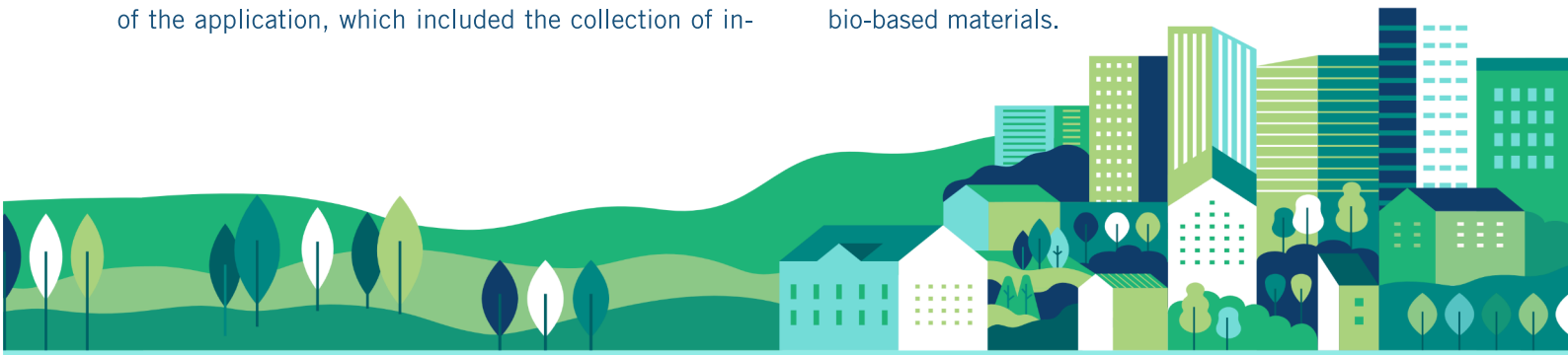
We are particularly pleased with the response we received to this call. Between 17 February and 15 May 2023, we received a total of 27 applications from across Europe and beyond, with participants from countries such as Spain, Cyprus, Portugal, Ireland, Greece, Italy, Germany, Croatia, Kenya, Ghana, and Romania. The diversity and quality of the proposals submitted was truly gratifying.

The cooperation and commitment of all our partners were essential during the project selection process. After a rigorous evaluation process and following a transparent scoring scale based on the procedures previously developed in the previous phases of the project, we have selected six candidates and their respective projects.

The companies **Futurechormes, Kalichem, Magnostics, Ecorbio, Encapsulae** and **Algaesys** now have access to the test bed services after completing the second stage of the application, which included the collection of information related to market impact, social, environmental, and economic benefits, resources allocated by the applicant during implementation and timeframe for delivery. In addition, they successfully passed a presentation and an interview. These projects will receive free funding from the European Union through the project partners and will have the opportunity to work on the BioNanoPolys test bed. Their main objective is to develop bio-based materials or validate those already produced internally.

The six selected companies started to receive the technical and complementary services offered by the different project partners last September and will have a maximum duration of 8 months. Thus, during these next months, these companies will have the opportunity to test and perfect their innovative ideas related to bionanomaterials. They will have free access to the services of the 14 enhanced pilot lines, as well as complementary services designed to support technological and commercial breakthroughs.

This is an exciting step forward in our journey towards a more sustainable and innovation-focused future. We will continue to update you on the progress of these projects and other exciting developments in the world of bio-based materials.



USER VOICES

BIONANOPOLYS FOR THE UTILIZATION OF HIGH ORGANIC CARBON WASTEWATERS

WHAT IS ALGAESYS' MISSION?

At ALGAESYS we deliver low lifecycle cost, circular water & resource recovery solutions harnessing highly efficient nature-based approaches. We aim to make water reuse affordable for all, supporting the building of water resilient sustainable communities and businesses.

By decarbonising the wastewater treatment process we utilise "worth-less" wastewater as a feedstock, and sequester carbon into our biomass. Rather than discharging to watercourse, we recover high quality water and, simultaneously, create valuable materials from our carbon-rich biomass.
We aim to deliver substantive impact through financed multi-site deployment.

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

As an innovator deeply involved in the fields of biotech, nanotechnology and biopolymers, we see several critical challenges that urgently demand a more efficient open innovation process.
One of the foremost issues is the complex, interdisciplinary nature of these fields. Progress in nanotechnology and biopolymers often requires a multi-disciplinary approach, including materials science, biology, chemistry, and engineering. An open innovation process facilitates collaboration among experts from these diverse backgrounds, fostering the cross-pollination of ideas, creativity and knowledge sharing.

Resource constraints are another significant challenge. Research and development in nanotechnology can be prohibitively expensive, with access to specialised equipment and facilities posing a formidable barrier. Open innovation can help mitigate this challenge by enabling the pooling of resources, reducing costs, and accelerating the pace of innovation.

Navigating the intricate web of regulatory requirements is yet another hurdle. The development and application of nanotechnology and biopolymers are subject to strict regulations due to concerns about safety and environmental impact. An efficient open innovation process can bring together researchers, industry players, and regulatory bodies to collaboratively establish common standards and navigate the regulatory landscape more effectively.

Global competition is also a pressing concern. Innovation in these fields is highly competitive on a global scale. Embracing open innovation allows us to tap into global talent pools, foster international collaborations, and stay competitive in the ever-evolving landscape of nanotechnology and biopolymers.

In the fast-paced world of technology, speed to market is critical. Open innovation can streamline the product development process by leveraging external expertise and resources, reducing time-to-market, and enhancing our ability to meet consumer demands quickly.

Moreover, in an era of heightened environmental awareness, sustainability concerns loom large. The development of sustainable materials and technologies is no longer an option but a necessity. Open innovation facilitates the exchange of sustainable practices and ideas, driving the development of eco-friendly nano-polymers.

Finally, gaining market access and commercialisation support can be challenging, particularly for start-ups and smaller organizations. Open innovation can provide valuable connections, mentorship, and support networks to help bring innovative products and solutions to market successfully.

WHAT IS YOUR USE CASE ABOUT?

We are exploiting the ALGAESYS carbon sequestering mechanism to maximise the yield of high value products extractable from our biomass. To maximise this opportunity, we are processing high organic carbon wastewaters such as found in food & beverage industry effluents.

We hope to demonstrate cost-effective extraction of high value end uses of biomass-derived products to quality standards attractive to the marketplace and confirm best appropriate commercial applications.

To date we have identified and started to engage with an international food & beverage business. We are planning to deploy one of our photo bio-reactor system to one of their production facilities in Europe. They have a keen interest in building water resilience by maximising water reuse whilst decarbonising their systems and reducing energy costs; they are also very enthusiastic and supportive about the potential for the biomass derived product opportunities.

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

To realise best results in our use case, developing a new business line using our core technology, we are working with both technical R&D and commercial advisory partners. They include BIOTREND and BBEPP who will work with us on pilot scale work and extraction proces-

ses. CENTI will look at the functionality and optimising formulations, the intent being to identify the highest value market for which we can effectively deliver. The teams at IMT and IRIS will help us investigate scaling up, modelling production, process optimisation and quality control.

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

We are delighted at being supported by Bionanopolys Open Innovation Technology Base, opening up new possibilities and offering a multifaceted set of benefits: The OITB creates a collaborative ecosystem where researchers, innovators, and industry experts can come together. This collaborative environment fosters the exchange of ideas, knowledge, and expertise, which is essential for driving innovation in the field of nanotechnology and biopolymers.

Access to Resources: Bionanopolys OITB likely provides access to state-of-the-art research facilities, equipment, and resources that might otherwise be cost-prohibitive for individual researchers or smaller organizations. This access can accelerate research and development activities significantly.

Interdisciplinary Opportunities: Nanotechnology and biopolymers are highly interdisciplinary fields. The OITB likely facilitates interdisciplinary collaborations, allowing experts from various domains to work together on complex problems, leading to innovative solutions that wouldn't be possible within single-discipline silos.

Accelerated Development at Reduced Costs: By sharing resources and expertise, participants in the OITB can accelerate the development programme whilst reducing their research and development costs. This cost-sharing aspect can enable more efficient use of funding and resources, ultimately leading to more impactful outcomes.

Sustainability Focus: As sustainability becomes increasingly important, the OITB may encourage, and support research and development efforts focused on environmentally friendly, decarbonised solutions in nanotechnology and biopolymers.

DO YOU - AS A USER OF THE OITB - HAVE ANY RECOMMENDATIONS FOR OTHER (FUTURE) OITB USERS?

- Embrace collaboration with peers and industry partners.
- Leverage interdisciplinary opportunities for innovation.
- Stay informed about OITB developments and resources.
- Connect with industry partners for commercialisation opportunities.
- Consider sustainable practices in your projects, with OITB support.
- Stay adaptable to seize emerging opportunities.

ALGAESYS

Visit ALGAESYS Homepage:
www.algaesys.earth

IMAGES BY ALGAESYS

SERVICES IN SPOTLIGHT

THE CTP . . .
INNOVATION FOR FUTURE!

FRANCOIS BRU, CTP

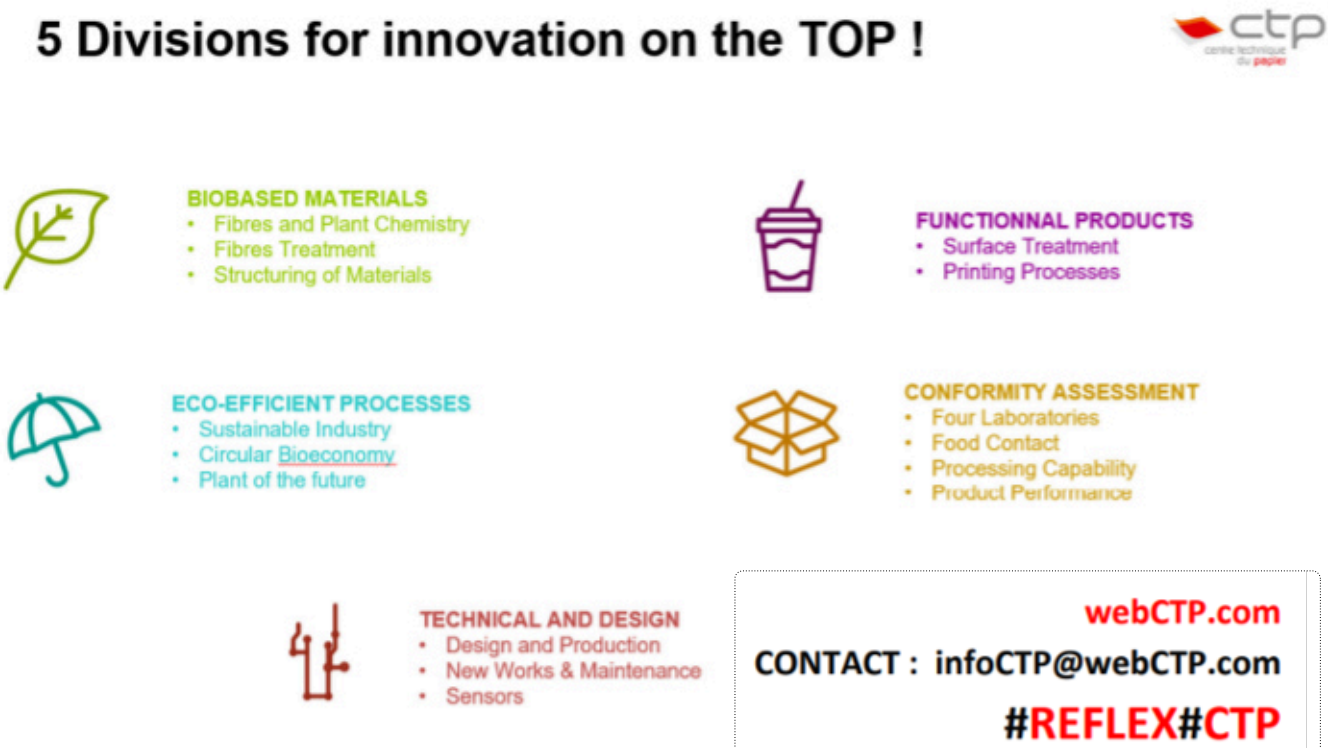
Applied research, consultancy-expertise, testing and training for those involved in the production, conversion and printing of paper and board are the missions of the Centre Technique du Papier.

Independent, innovative and at the cutting edge of technology, the CTP prepares the products and processes of tomorrow through Technological Innovation in many fields and ensures their transfer to industrial sites. For nearly 65 years, the CTP has been a partner to companies:

By developing new products and processes, both in the laboratory and on a pilot scale, to give new properties to paper and cardboard,
By training those involved in paper and board production and packaging in the application of regulations and best practice,
By developing new functionalities for printed matter and packaging, such as printed electronics applications or functional barriers, which open up new fields of product innovation.
By bringing to market new processes such as chromatogeny or wet lamination of MFC, which open up new possibilities and new markets, and by differentiating R&D to provide better service to customers

The CTP's engineers and technicians are aware that creating value in companies must be at the heart of their concerns, and are ready to listen to your needs. Many companies have put their trust in us to help them improve their performance and competitiveness and develop their products.

WITH THE CTP, EXPERIENCE THE FUTURE THROUGH INNOVATION!



BUSINESS ADVISOR

ROCK YOUR PITCH AT EBAN EVENTS!

ABEL FERNÁNDEZ, EBAN

WELCOME TO THE WORLD OF EBAN EVENTS, WHERE NAILING THE PERFECT PITCH GOES BEYOND MERE SKILL – IT'S AN INTRICATE CRAFT.

THREE PLUS THREE MINUTES

At EBAN events, time is of the essence. You have precisely three minutes to weave your narrative and leave an indelible mark. After your presentation, it is the expert jury's turn to step in. Comprising of EBAN members and Business Angels, they have their own three-minute window to ask questions and seek clarifications. It is important to note that there will be a hard stop at the end of each three-minute segment, and no exceptions will be granted.

CRAFTING YOUR PERFECT PITCH

Crafting a winning pitch is a blend of structure and creativity. While there's no one-size-fits-all format, there are nine core elements to consider. Consider these as the foundational elements of your presentation, each playing a significant role in the narrative you're about to unveil.

1. The Problem: Dive into the world of your client, highlighting the need you're addressing.
2. The Solution: What's your innovation? Share its benefits, its stage of development, and any unique credentials.
3. The Market: Paint a vivid picture of your clientele and market landscape. Numbers speak volumes, so back your vision with data.
4. The Competition: Embrace your rivals, but illuminate what sets you apart. Uniqueness is an essential part of your project.
5. The Sales Strategy: How will your business thrive financially? Explain your revenue model, market penetration, and strategy.
6. The Milestones: Outline your journey thus far and your aspirations ahead. Successes, recognitions, and future objectives, show your trajectory.
7. The Leadership: Introduce your key players, their skills, expertise, and connections. Mentors, partners, and a growth plan signal strength.
8. The Financials: Take a dive into projected incomes, margins, and cash flow. Past accomplishments and future ambitions complete the financial puzzle.
9. The Funding: How much do you need? What's your plan? Investors seek clarity on the journey ahead.

THE DUAL NATURE OF PITCH DECKS

For your pitch to resonate, consider the platform you are on. On stage, simplicity holds the utmost importance. Big fonts, minimal text, and no more than three elements per slide are thus highly recommended. There's no slide count limit, only a time constraint. Off-stage, during evaluations you should aim to provide more depth. Thus, we would recommend preparing a second presentation which contains additional information, without sacrificing simplicity and efficiency.

REHEARSE

Rehearse until your pitch flows effortlessly. Stay on track, on time, and deliver with conviction.

BEYOND WORDS

Audiovisuals are your allies. Videos, graphics, and other multimedia can amplify your message, adding depth to your narrative.

THE TICKING CLOCK: PUNCTUALITY MATTERS

Respect the schedule. Your delay will paint a negative and unreliable picture of you to the investors. Your punctuality reflects professionalism and dedication.

CAPTURING ATTENTION IN A BLINK

Your goal is not to explain every detail, but to capture interest. Investors intrigued by your pitch will connect later, giving you ample time to delve into the complex intricacies of your project.

THE POWER OF SIMPLICITY

Use clear, concise language. Complexity doesn't always impress. Speak professionally, but don't get lost in technical jargon.

BUILDING TRUST THROUGH PRESENTATION

A clear, composed presentation builds trust. Manage your tone, be concise, and listen attentively. Your clarity mirrors your credibility. Be a good listener, being on stage does not imply you should have a monopoly on speaking.

THE ART OF HOLDING BACK

You are not obligated to share all your trade secrets. Focus on what makes your venture special without divulging every detail. Investors admire honesty: everybody knows the concept behind Google and what a Ferrari is made of, what makes them special is how they make it happen.

LASTING IMPRESSION: THE CONTACT DETAILS

As your pitch concludes, leave a trail for interested investors. Share your contact details, inviting them to reach out.

THE EVALUATION PROCESS

Investors are not there to buy your products, but rather to decide if it is worth it to invest their time, knowledge, network, and money to help you grow your business. They invest in companies, not products. Your pitch is therefore not a sales pitch; it is an invitation to a partnership. They evaluate based on:

1. **Value Proposition:** Your business idea's allure.
2. **Market Potential:** The impact and scalability in the market.
3. **Execution Prowess:** Your team's capability to turn plans into reality.
4. **Financial Standing:** Projections, past income, and financial strategy.
5. **Team Strength:** Your team's expertise and strategic alliances.

THE THREE PILLARS OF SUCCESS

The “idea” is just one component of your company, so be sure not to leave out the other 2 key pillars of your business! Success is built on:

1. The Idea: A solution to a real problem.

2. The Team: A dedicated team turning ideas into reality.

3. Execution: Making the idea and team thrive amidst competition.

MINIMIZING RISK, MAXIMIZING HONESTY

Embrace your vulnerabilities. Address weaknesses and propose solutions to showcase your diligence and preparation. Investors will get alarmed if they notice you hiding sensitive parts. Honesty appeals to investors, but evading it does not.

Crafting a compelling pitch is not just about the words you say. It's about weaving a story that resonates, backed by a solid foundation of strategy and preparation.

eban

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IMAGES BY PEXELS

GET TO KNOW OUR NETWORK

COORDINATING THE TRANSVERSAL SERVICES TO BIONANOPOLYS PARTNERS

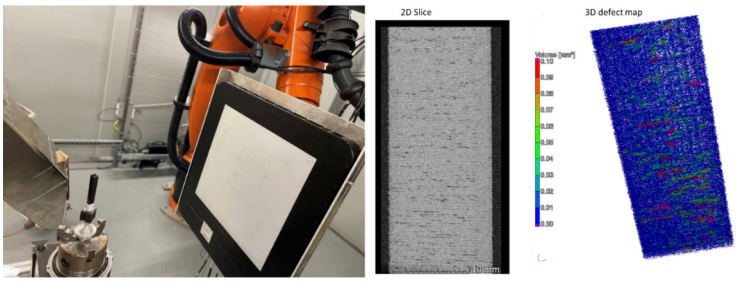
HERMINE LEMAIRE, JITENDRA RATHORE, MARIUS COSTIN, ADRIEN STOLIDI, STEVE MAHAUT, CEA-LIST

CEA-LIST, as an integral part of CEA's Technological Research Division, specializes in the dynamic domain of intelligent digital systems. Our overarching mission is to contribute to the enhancement of industries competitiveness by facilitating the seamless transfer of cutting-edge technology and innovation to various industrial sectors. Operating within the Digital Instrumentation Department (DIN) at CEA-LIST, we actively participate in the BIONANOPOLYS project, where our role aims at coordinating transversal services for partners. This involves utilizing both established and pioneering technologies to foster innovation. Within our department, we are proud to provide a wide range of cutting-edge non-destructive technologies. Each of these technologies is meticulously designed to offer innovative solutions tailored to meet the specific needs of diverse industries.

In the framework of the BIONANOPOLYS project, our emphasis is on harnessing X-ray-based methods for material characterization and benchmarking. We possess a range of equipment with various modalities to cater to specific project requirements. Our approach goes beyond relying solely on existing capabilities; we actively explore innovative methods such as phase contrast and spectral imaging to enhance the depth and precision of our analyses.

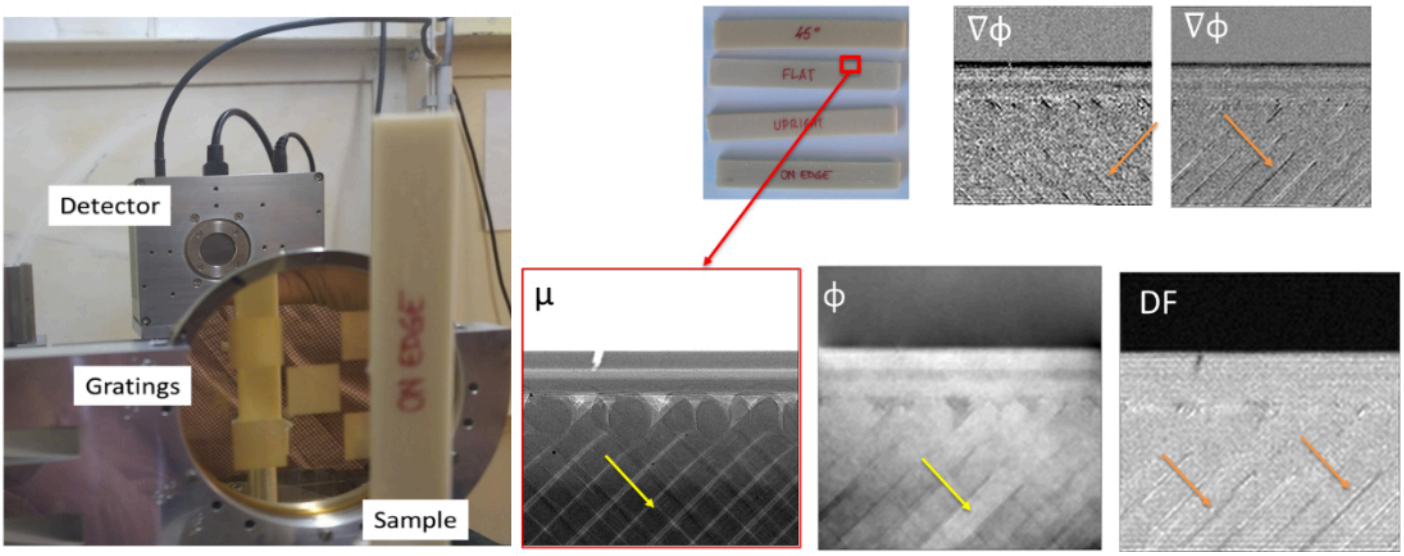
X-ray radiography/tomography: Equipped with various X-ray systems, our most advanced setup features a microfocus tube and a flat panel detector, both carried out with robotic arms, offering unparalleled flexibility. We recently conducted a case study in collaboration with CIDAUT, examining how the printing direction influences the final product. Using various post-processing algorithms, we can accurately analyze defects and furnish detailed information for cross-correlation with the process parameters.

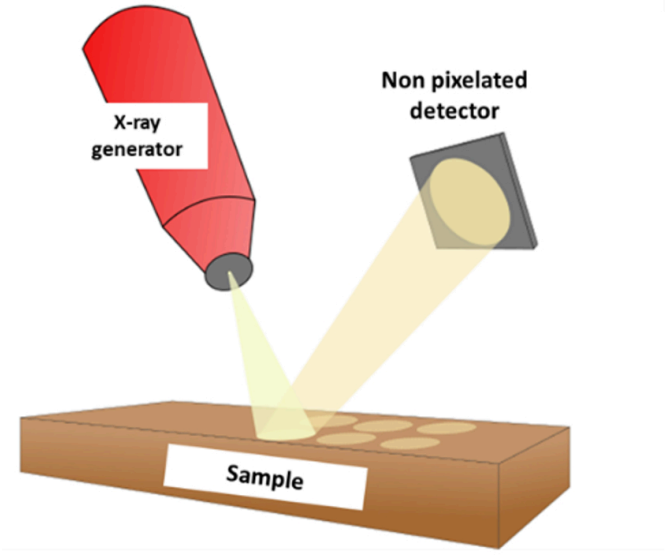
Depending on the requirements from the partner, we can also use X-ray Fluorescence (XRF) Spectrometry, which is a non-destructive technique enabling the identification of chemical elements spanning from Magnesium to Uranium. Through calibration, it can also determine the proportion of elements present. Additionally, this method serves as a precise measurement tool for the thickness of fine layers, ranging from above a micrometer to about a hundred micrometers, depending on the sample configuration.

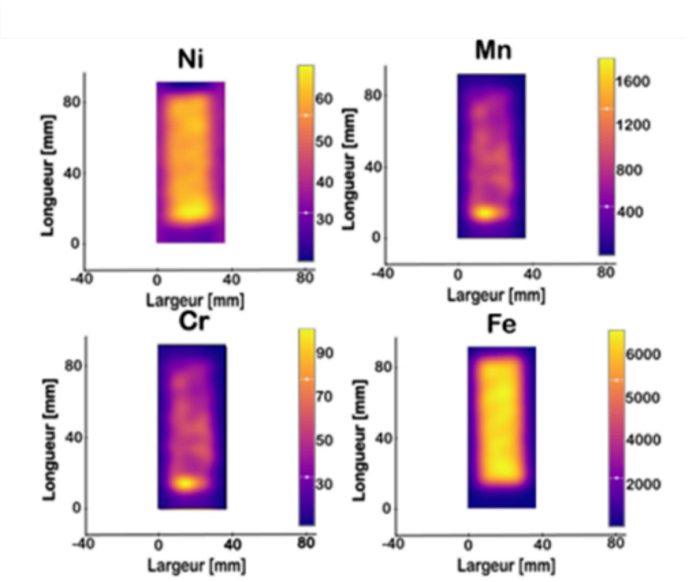


INNOVATIVE APPROACHES

X-ray phase contrast imaging and dark field signal offer enhanced sensitivity compared to traditional absorption radiography. This improvement is achieved by measuring the phase shift of X-rays and their scattering, respectively. Particularly effective for low-density and/or carbon-based materials like polymers, plastics, and composites, this innovative approach enhances image contrast and enables the characterization of small features and structural orientation. In a prior







study involving samples from CIDAUT, we employed this methodology. Due to a limited field of view, we focused on a small region-of-interest (highlighted by the red square), creating a complementary relationship between classical attenuation radiography (μ) and phase radiography (Φ). Despite the non-negligible noise contribution, oriented structures are clearly delineated in the phase gradient (∇Φ) and Dark Field (DF) images (indicated by orange arrows).

Similar to XRF spectrometry, XRF spectral imaging incorporates spatial information. This allows the examination of large samples to generate 2D imaging. Strategies such as cartography or matrix sensors, coupled with specialized post-treatment algorithms, can be employed to enhance the analysis of the spatial distribution of elements within the sample. An example of spectral imaging is presented in the figure (the colour maps show the counts of the elements).

cea list

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www.bionanopolys.eu

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