Novel packaging films and textiles with tailored end of life and performance based on bio-based copolymers and coatings

Newsletter April-May 2023

Contents

BIOnTop Key figures

Funded by the call topic: BBI.2018.SO3.R10 - *Develop bio-based packaging products that are biodegradable/ compostable and/or recyclable*

Funded by: BBI JU
Research and Innovation action: start at TRL 3-4, target by the end of the project is TRL 5-6

Start and end date: 1/06/2019 – 31/05/2023
Budget: 5,4M€ (BBI-JU contribution is 4,2M€)

Consortium: 21 partners (4 Research and Technology Organisations, 9 SMEs, 6 Large Industries, a consumers' association and a pan EU industry association)
7 Biobased Industries
From 8 EU countries

+Advisory board
+ External Advisory Board "Dissemination and mobilisation of stakeholders"

Twitter: @BIOnTop_Project **LinkedIn:** www.linkedin.com/in/biontop-project

BIOnTop has developed **novel bio-based and compostable packaging and textiles** through **experimental research on copolymers and compounds with customized biodegradability and multifunctional coating solutions**.

The 4-year research project has gathered 170 experts from research institutes and private companies, spanning from mechanical engineering to food and packaging and including trade associations and experts in dissemination and technology transfer from 8 European countries.

Dear partners, dear BIOnTOp followers,

In the past months all BIOnTop partner have been involved in many events to promote their achievements and the final results. In particular, the project teamed up with additional 11 EU-funded projects for its final conference.
Check the resources available, there is a wealth of information in the presentations, the recordings and the book of abstracts.
The full proceedings will be available in our June newsletter.

Conference on Innovations on Sustainable Materials for Textiles, Coatings, Films and other wide use Applications, 11 May 2023, Düsseldorf and online

In the past few years several projects funded by the Bio-based Industries Joint Technology Initiative such as BIOnTop, Usable Packaging, CelluWiz, MANDALA have developed novel alternative solutions to eco-design packaging products to avoid

the incineration and landfill routes at their end-of-life phase, rerouting them instead towards approved and accepted applications, where they can add value without adding an environmental burden.

These four projects and other eight EU-funded projects joined forces on 11 May 2023 for a joint conference organised by European Bioplastics, ENCO and AIMPLAS to present their latest results and exchange with their peers on future applications of bioplastics and bio-based materials. The conference also saw several successful contributions from other EU-funded projects such as PRESERVE, SEALIVE, GLAUKOS, Polybioskin, REPuropose, RECOVER, ECOFUNCO and NENU2Phar.

Back in 2018, the consortia of **BIOnTop, CelluWiz, MANDALA and USABLE PACKAGING** responded to a call of the Bio-based Industries Joint Undertaking (BBI JU)/European Commission related **to the development of bio-based packaging products that are biodegradable/ compostable and/or recyclable**. **The specific challenge of these twin projects was to make the end-of-life phase for packaging significantly more sustainable.** Over the past years, all these projects designed new processing systems for functional bio-based packaging products that are **reusable, recyclable, and/or compostable and biodegradable, as an alternative to the currently identified benchmark products.**

These projects have proven that the packaging products are recyclable or compostable/ biodegradable in various environments to reduce the overall environmental footprint. A more circular packaging production is possible. The benefits of a circular packaging production are tangible, and this has been demonstrated by providing evidence of novel processing solutions and products, all developed by involving consumer organizations, recyclers and composting plant representatives.

Resources

- **Presentations:** https://zenodo.org/communities/biontop
- **Book of abstracts:** https://zenodo.org/record/7922099#.ZGM2OOxBz0o
- **Webrecording:** 11 May 2023 "Innovations on Sustainable Materials for Textiles, Coatings, Films and other Wide Use Applications"

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Latest articles and publications

- Article by Corina Reichert, Erik Sauter, Markus Schmid (ASU): Alginate coated PLA textile as aroma barrier for tea bags, Plastverarbeiter, https://www.plastverarbeiter.de/roh-und-zusatzstoffe/aromabarriere-fuer-teebeutel-528.html
- Paper: Micromechanical analysis and fracture mechanics of Poly(lactic acid) (PLA)/Polycaprolactone (PCL) binary blends, Laura Aliotta, Vito Gigante, Ruben Geerinck, Maria-Beatrice Coltelli, Andrea Lazzeri, https://doi.org/10.1016/j.polymertesting.2023.107984
- Paper: Recyclability studies on Poly(lactic acid)/poly(butylene succinate-*co*-adipate) (PLA/PBSA) biobased and biodegradable films, Maria-Beatrice Coltelli, Vito Gigante, Gianluca Fasano, Marco Romei, Filip Miketa, Filip Brkić, Rafael Alonso, Patrizia Cinelli, Ilaria Canesi, Laura Aliotta, Andrea Lazzeri, Submitted to Macromolecular Materials and Engineering, *in review*
- Article by Maria-Beatrice Coltelli (INSTM): Progetto Europeo Biontop. Imballaggi bioplastici rinnovabili, riciclabili e degradabili nella compostiera domestica, COM-PACK, il bimestrale sull'eco-packaging. Article in Italian on COM.PACK journal (bimestral journal dedicated to ECOPACKAGING). It appeared on the January/February issue 2023

- Article by Chiara Bearzotti and Estela Lopez-Hermoso (EUBP): How to advance innovation in novel sustainable materials for textiles, coatings, films and other wide use applications? Learn from 12 EU-funded projects presenting outstanding results after Interpack in Düsseldorf, bioplastics magazine, *in print, https://www.bioplasticsmagazine.com/en/*

Policy updates

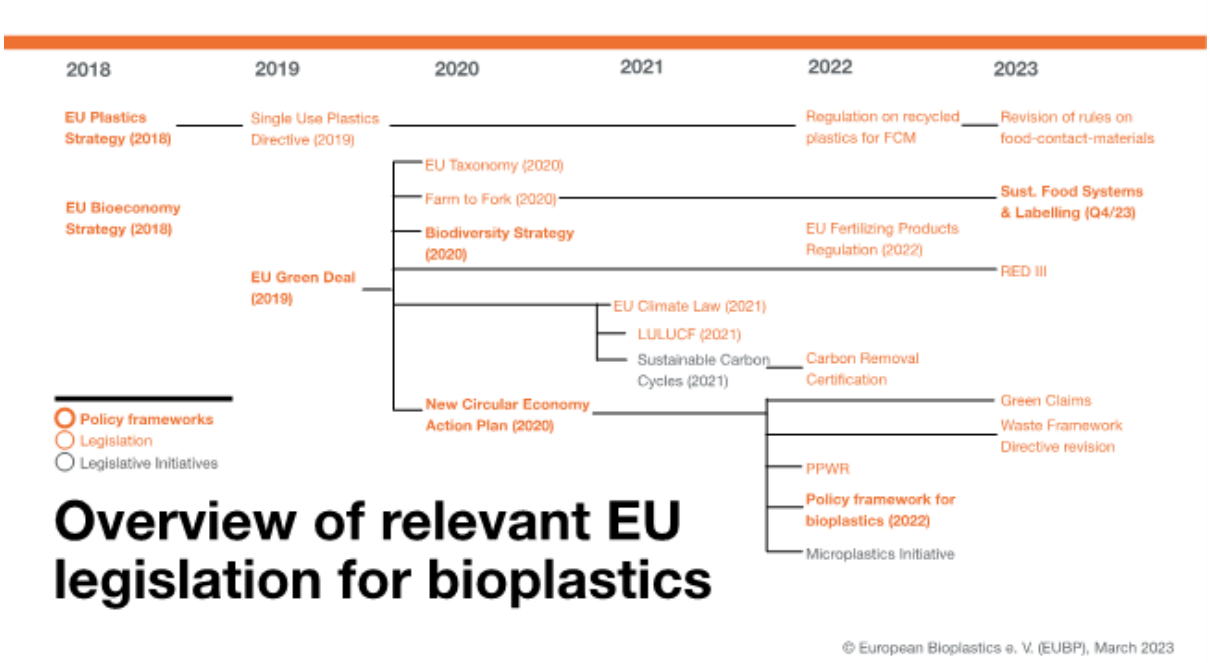
Since our last update, a lot is moving in the European landscape. The most relevant policy initiatives and developments include:

- The publication of the European Commission's Communication for a Policy Framework for bio-based, biodegradable and compostable plastics.
- The publication of a European Commission's proposal for a Packaging and Packaging Waste Regulation (both published on 30 November 2022).

Simultaneously, the European Commission is working on the revision of several other rules, including rules on Food Contact Materials, as well as on Green Claims / Substantiating Claims on the environmental performance of products and businesses, and an initiative on Microplastics.

Additionally, the proposal for a Regulation on the Ecodesign for Sustainable Products is currently under discussion between the co-legislators, the European Parliament and Council of the European Union.

The diagram below shows the various relevant legislative proposals, revisions, and initiatives and their connection to the wider EU strategies and related Action Plans, such as the European Green Deal and the EU Plastics Strategy (2018). The European Green Deal sets out the aim for Europe to become climate neutral by 2050. As part of this policy framework, the New Circular Economy Action Plan (2020) focuses on sustainable use of resources.



In this newsletter, our focus is on the latest updates on **Food Contact Materials legislation**.

The European Commission is currently reviewing the rules on Food Contact Materials (FCMs) to improve food safety and public health, support the use of innovative and sustainable packaging solutions using environmentally friendly, re-usable and recyclable materials, and contribute to food waste reduction.
The current regulatory framework on FCMs is outlined in EU Regulation 1935/2004. Additionally, plastic materials and articles intended to come into contact with food are covered by EU Regulation No 10/2011 that sets out rules on the composition of plastic FCMs and establishes a list of substances that are permitted for use in the manufacture of plastic FCMs. Specific Migration Limits are established by the European Food Safety Authority (EFSA) based on toxicity data of each specific substance. The other specific EU legislations (Directives) cover: Active and Intelligent Materials, Ceramics, and Regenerated Cellulose Films. In addition to the above-mentioned Regulations, all FCMs must be manufactured in accordance with the Good Manufacturing Practices (GMP, Commission Regulation (EC) No 2023/2006). Lastly, in the absence of specific EU measures, EU Member States may maintain or adopt their own national provisions on FCMs in accordance with Article 6 of Regulation 1935/2004. National legislation is in place in most of the EU Member States, setting out individual rules on varied materials and substances.

The European Commission closed a public consultation on January 2023. The next step will be the publication of a proposal and then its adoption, expected in the second quarter of 2023. The results of the consultation can be viewed online: https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12497-Revision-of-EU-rules-on-food-contact-materials_en

In the meantime, a regulation on recycled plastic materials and articles intended for food contact: the Commission Regulation (EU) 2022/1616 entered into force on 10 October 2022. The Regulation aims to streamline existing regulations on the development, certification, and use of food contact materials (FCMs), including innovative novel plastic recycling technologies under development to avoid risks to human health and foster innovation.

Extensive rules are laid down on the requirements for the development of a novel technology, e.g.:

- The developer shall notify the competent authority in the territory where the developer is established and the Commission of the novel technology;
- The novel technology shall be registered in the newly established Union register of technologies, recyclers, recycling processes, recycling schemes, and decontamination installations, including in depth information of the novel technology and the properties of the recycling technologies, the developer, the installations, etc.;
- The developer shall also publish a detailed report, not including aspects of commercial relevance, if justifiable.

The Regulation also contains **provisions for monitoring and reporting contamination levels, assessing new technologies, and deciding whether to adopt them**:

- The developer shall publish every 6 months a report on its website, based on the latest information from all installations using the novel technology;
- The new regulation also requires that the European Food Safety Authority (EFSA) provides an opinion on whether novel recycling technologies are suitable to be used as a basis for recycling processes based on the kind of plastic input they are intended for.

Regarding the **placement on the market of recycled plastic materials and articles manufactured with a novel or suitable recycling technology**, the regulation allows for the placing on the market of recycled plastic materials ad articles produced using novel technologies under strict conditions and for a limited amount of time in order to gather data to be able to assess the suitability of a novel technology and to lay down the specific requirements.

Questions on policy updates?
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Open and long-term access to results

All our presentations and posters are uploaded to Zenodo for granting you all Open Access, long-term, extending the life of the results well beyond the lifetime of the project.

Have you already checked what is available on Zenodo?

https://zenodo.org/communities/biontop/

BIOnTop Tech watch

For other relevant news, have a look on the BIOnTop tech watch

BIOnTop has received funding from the Bio-based Industries Joint Undertaking (JU) under grant agreement Nr. 837761. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.