

CONFERENCE BOOKLET

Conference on Circularity for Food Packaging

23 November 2023

Fraunhofer IVV, Giggenhauser Str. 35, 85354 Freising, Germany



AGENDA

09:00 – 09:30	Registration & Welcome Coffee
09:30 – 09:45	Official Welcome and CIRCULAR FoodPack Introduction Esra Küçükpinar, <i>Fraunhofer IVV (Project Coordinator)</i>
09:45 – 10:05	Keynote Speech: Packaging and Packaging Waste Directive Wolfgang Trunk, <i>DG ENVI, European Commission</i>
10:05 – 10:25	Circularity in Food Packaging Peter Sandkühler, <i>DOW</i>
10:25 – 10:45	Collection of European Packaging Waste Streams Virginie Decottignies, <i>SUEZ</i>
10:45 – 11:05	Sorting of Plastic Packaging Jochen Moesslein, <i>Polysecure</i>
11:05 – 11:20	Q&A Collection & Sorting Moderation: Andrey Turshatov, <i>KIT</i>
11:20 – 11:45	Coffee Break and Networking
11:45 – 12:05	Recycling Technologies for Packaging Martin Schlummer, <i>Fraunhofer IVV</i>
12:05 – 12:25	Design for Recycling (Inks and Deinking) Steven De Meester, <i>Ghent University</i>
12:25 – 12:45	Closing the Loop with Infrared Technology for Direct Food Contact Marcus Vogt, <i>Kreyenborg</i>
12:45 – 13:05	Q&A Recycling Moderation: Virginie Decottignies, <i>SUEZ</i>
13:05 – 14:05	Lunch Break and Networking

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14:05 – 14:25	How recyclable Mono-Plastic Packaging becomes Reality Ralf Leineweber, <i>SIEGWERK</i>
14:25 – 14:45	Food Compliance: Recyclates in Food Contact Diana Kemmer, <i>Fraunhofer IVV</i>
14:45 – 15:05	Looping you in: How to incorporate Post-Consumer Recyclates in Packaging Material Nicolas Mys, <i>AMCOR</i>
15:05 – 15:25	Q&A Food Compliance & Design for Circularity Moderation: Burkhard Schaer, <i>ECOZEPT</i>
15:25 – 15:55	Coffee Break and Networking
15:55 – 16:15	Life Cycle Sustainability Assessment of Food Packaging Sophie Huysveld, <i>Ghent University</i>
16:15 – 16:25	Q&A Sustainability Moderation: Martin Schlummer, <i>Fraunhofer IVV</i>
16:25 – 16:45	Key Takeaways for the Circular Plastics Community from an R&I Perspective Keti Medarova-Bergstrom, <i>European Research Executive Agency (REA)</i>
16:45 – 18:30	Get-Together with Drinks & Snacks Networking and Poster Exhibition of Circular Plastics Cluster and other associated projects: <i>EU projects CIMPA, R3PACK, SOL-REC2, CIRCULAR FoodPack (all four part of the Circular Plastics Cluster) as well as EU project FlexFunction2Sustain are present and look forward to discussing their approaches towards a Circular Economy of Plastics.</i>
18:30	End of Conference

The conference is moderated by **Swantje Eissing**, *Fraunhofer IVV* and **Nelly Freitag**, *Fraunhofer IVV*.



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SPEAKERS



Esra Küçükpınar received her Master of Engineering in Chemical Engineering from the Stevens Institute of Technology, USA in 1997, with a focus on polymer processing. She received her Ph.D. in Chemical Engineering in 2003 focusing on simulations of gas permeability through polymeric materials.

Since 2003, she has been employed at Fraunhofer Institute for Process Engineering and Packaging (Fraunhofer IVV) as a senior scientist. She has experience of international projects funded by the EU Commission, from FP5 onwards. She is leading the Group Functional materials, and coordinating the CIRCULAR FoodPack Project.



Wolfgang Trunk, European Commission, DG Environment, Team Leader for the Waste Framework Directive, was awarded a PhD in 1994 for his research on "Economic evaluation of strategies to reduce emissions of harmful gases, including greenhouse gases, from dairy farms" by the University of Hohenheim, Germany.

He occupied several positions at the Federal Ministry of Agriculture, Germany, before he joined the European Commission in 2005. He worked for DG SANTE before he joined DG Environment in 2022, where he is working in the area of the Packaging and Packaging Waste Directive, the Circular Economy of Critical Raw Materials Directive, the Mineral Waste Directive and the Single-Use Plastics Directive.



Peter Sandkuehler is the Director for Sustainability, for Europe, Middle East and Africa, for the Packaging and Specialty Plastics business of Dow. Peter leads the business in addressing sustainability challenges and opportunities, focusing on Dow's Protect the Climate, Transform the Waste, and Close the Loop business targets in the region. He works across the organization and with partnerships to drive an increase in circular polymers, low carbon solutions and carbon emission reductions. He co-leads a cross-functional team to drive and implement new business models for advanced and mechanical recycling and serves as the Dow representative in external regional consortiums like PlasticsEurope.

Prior to this, Peter was a TS&D/R&D Fellow in the European R&D organization working on design for recycling, packaging application development and circular packaging solutions.

Peter brings 18 years of working experience in the chemical industry and holds a PhD in Chemical Engineering from the Swiss Federal Institute of Technology in Zurich, Switzerland (2004) and a Master in Chemical Engineering from the Technical University of Clausthal.

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Virginie Decottignies is working as a chemical engineer on waste characterization and management for 20 years, at CIRSEE – one of the Expertise Centers of SUEZ. Since 2016, she is the head of the Material Recycling & Recovery department.

Within CIRCULAR FoodPack, 5 people of the CIRSEE team are involved in some tasks of the project: the waste streams characterization and the participation to the demo scale work package for the waste preparation and delivery to the partners and for the densification, extrusion, and granulation of recycled LDPE.



Jochen Moesslein has studied and researched Physics and Economics at Stanford University, USA and the Universities of Stuttgart, Konstanz and Kiel, Germany with master degrees in both subjects.

Throughout his life, Jochen has founded, managed and invested in several companies, among them a producer and installer of solar collectors, a manufacturer of biomass fuels, an eCommerce software developer and an innovative medical device company. The most relevant transactions were the IPO of a BioTech company (BioTissue AG), the trade sale of a dental implant manufacturer (Camlog AG to Henry Schein) and the trade sale of an innovative medical device company.

Together with other investors, Jochen founded Polysecure in 2009. His vision is again to use strong innovation in order to solve certain challenges towards a more sustainable and circular economy.



Martin Schlummer is an experienced and established researcher who has been active for the last 25 years. He gained his first degree in Geo-ecology from the University of Bayreuth, Germany and achieved a PhD in Chemistry from the University of Erlangen, Germany.

He has spent most of his professional career at the Fraunhofer Institute IVV, Freising, where he has been involved in both the chemical analysis of hazardous compounds and investigations into innovative polymer recycling techniques. He currently serves as deputy head of a 30-person interdisciplinary research department at the institute and manages its business field "Recycling and Environment".

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Steven De Meester is professor at the Laboratory for Circular Process Engineering (LCPE) of Ghent University, Belgium and also guest professor at the University of Maastricht, the Netherlands.

Prof. De Meester's group focuses on cleaning plastic waste by advanced pre-treatment and downstream processing. This is important, as it is clear that waste is heterogeneous and mechanical and chemical recycling technologies are sensitive to contaminants.



Marcus Vogt studied Production Engineering with a focus on plastic processing at the University of Applied Sciences Bielefeld, Germany.

Since 2005, Marcus is working for Kreyenborg GmbH & Co. KG as a Technical Sales Manager. He works on machines and turn-key solutions and focusses on bulk handling in plastics, the chemical industry and food processing.

With more than 20 years of experience in sales/marketing functions in the plastics machinery and plastics automation, Marcus is a trained plastics engineer with wide commercial and technical experiences. He has a strong expertise in the technical product management for Infrared Drying technologies and in Process Engineering for PET Crystallization / Drying processes. Marcus is an experienced global sales expert with a focus on North and South America.



Ralf Leineweber studied Chemistry at the Friedrich-Wilhelms-University Bonn, Germany and the Ludwig-Maximilians-University Munich, Germany and was awarded a PhD in Organic Chemistry from the University of Munich, Germany.

Since 2015, Ralf is Head of Global Technology within Siegwert's Global Technology department. One of his focus topics are developments and projects with stakeholders along the whole value chain related to increase the circularity of all kind of packaging.

As a result of his expertise and successful engagements, Siegwert won recently the Gold award in the sustainability category of the German Packaging Awards for the creation of a recyclable stand up mono-material PE pouch.

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Diana Kemmer is a certified food chemist and she is Head of the Department 'Product Safety and Chemical Analysis' of the Fraunhofer Institute for Process Engineering and Packaging IVV in Freising, Germany since 2019.

Her major research interests are the interactions between packaging materials and foods with a special focus on migration studies and compliance testing of food contact materials made of plastics. Her work also includes consultancy and safety assessments of food contact materials according to EU and US food regulatory requirements.



Nicolas Mys studied Materials Chemistry and was awarded a PhD in Engineering Technology by Ghent University, Belgium. He worked at this University as a postdoctoral researcher and focused among other things on mechanical and thermochemical recycling of plastic post-consumer packaging waste.

Since 2020, Nicolas is Product Development Engineer at Amcor, where he works mainly on the design of flexible packaging solutions focusing on mechanical recyclability and sortability.



Sophie Huysveld is postdoctoral researcher in the Research group Sustainable Systems Engineering (STEN) of the department of Green Chemistry and Technology at the Faculty of Bioscience Engineering at Ghent University, Belgium.

Sophie holds a Master degree in bioscience engineering – environmental technology and was awarded PhD in Applied Biological Sciences. In her research, she focusses on the (environmental) sustainability assessment in diverse sectors (recycling of plastic and wood waste, food, etc.). The recycling of plastics is currently a focal point of her research work.



Keti Medarova-Bergstrom is Research Program Manager at the European Commission's Research Executive Agency.

As Team Lead "Circular Economy", she focusses on the H2020 and Horizon Europe programme management and is Project Officer of the CIRCULAR Food-Pack project. She has an outstanding experience in European research funding and policies and will contextualize the key take-aways of this Conference from a broader European research and innovation perspective.

EU project CIRCULAR FoodPack

Circular Packaging for Direct Food Contact Applications

Circular FoodPack aims to enable the circular use of plastic packaging, addressing the most sensitive product category: food. The main function of food packaging is the protection of the product during transport from manufacturer to consumer and maximize the food shelf life, thus reducing food waste and its carbon footprint. Therefore, food packaging has to fulfil high requirements, like being light-weight, impermeable, sufficiently tear-resistant and printable, with an appealing haptic and not release chemicals into the food in quantities that are harmful to human health.

To fulfill all these requirements, most food packaging applications are made of plastic films, composed by complex multi-layered materials. However, such Multi-Layer Composite (MLC) laminates cannot be efficiently recycled by state of the art processes and thus valuable resources are lost, as this waste is mainly incinerated or landfilled. According to EU legislations and EFSA standards, it is not allowed to use recyclates from non-food plastic materials in newly produced food packaging applications because these recyclates do not meet the necessary requirements with regards to odor or contaminants, but to date, non-food and food packaging waste streams cannot be separated. With 2 Mio tons of MLC affecting the recyclability of 17.8 Mio tons of food packaging due to their composition and unidentifiable origin, the targeted material streams are significant and the expected impact of this research is substantial.

That is where Circular FoodPack ties in, targeting food packaging (dry food such as packed creamer, cocoa and coffee powder) as well as personal (e.g. face masks) and home care packaging (e.g. detergents, wipes). The project partners investigate newly developed Tracer-Based and Sensor-Based Sorting systems which allow for reliable sorting with new tracers and detection mechanisms. Once sorted, the packaging material will be washed, deodorized, the layers delaminated, deinked, dissolved and purified with the CreaSolv® Recycling Process and mechanically recycled. The recycling strategies and generated secondary (raw) materials will continuously be assessed with regards to food and environmental safety, social acceptance, quality, processability, economic feasibility and legal compliance. The recyclates will be incorporated into new high-performance mono-material food packaging that is following eco-design principles and will be easy to recycle at post-consumer stage. A true material cycle is created, contributing to the EU ambitions of a carbon-neutral society by 2050!



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Objectives

- Analysis of the current situation of the recycling of flexible food packaging and sampling of representative food packaging materials from different regions in Europe
- Development and validation of robust, food contact compliant fluorescent tracers, which can be printed as additive of typical printing inks
- Successful minimal adoption of conventional NIR sorters so that these can reliably detect small and commercially viable amounts of sorting tracers on all types of multi-layer food packaging
- Successful sorting trials with Tracer-Based-Sorting (TBS) of marked food packaging items, mixed in representative streams of packaging waste to prove technical feasibility with detection rates > 99%
- Develop, upscale and apply deodorization technologies able to remove > 95% of odorous components, benchmarked with common implemented deodorization technologies
- Perform mechanical recycling tests (re-granulation incl. melt filtration and re-compounding) as a quality assessment tool to guide developments towards closed loop circular food packaging
- Development of high performance functional barriers, effectively preventing migration of any residual contaminants from the PCRs below the migration limits set out by legislation and EFSA
- Demonstration of circular use of PE post-consumer recyclates (PE PCRs) in 3 use cases by 6 demonstrators
- Comprehensive holistic sustainability of the newly developed value chains, considering environmental, economic and social impacts, as well as circularity aspects, food waste and compliance to health and safety legislations



The CIRCULAR FoodPack project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 101003806.

MORE INFORMATION



www.circular-foodpack.eu



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CIRCULAR PLASTICS CLUSTER

The **Circular Plastics Cluster** is a joint activity of seven EU-funded projects aiming at making plastics more circular. The participating projects are **CIRCULAR FoodPack**, **CIMPA**, **MERLIN**, **REMADYL**, **SOL-REC₂**, **BUDDIE PACK** and **R₃PACK**. Their common objective is to boost the collection, sorting, cleaning, reuse, recycling, and manufacturing of plastic products, including complex and multilayer materials. As such, the cluster projects aim to cover the whole value chain in order to create a fully safe and sustainable circular model for plastic packaging waste. The Circular Plastics Cluster was initiated in order to join forces and create more impact for more circularity in plastic packaging.

The proposed solutions of the Circular Plastics Cluster are the following:

- Developing reuse schemes optimizing the economic and environmental factors
- Drivers to foster adoption by consumers of new consumption habits
- Profitable and sustainable business models
- A comprehensive sustainability assessment of the developed value-chains
- Novel mono-material packaging
- Innovative technologies to improve the sorting, cleaning, separation, and recycling of plastic and multi-layer material

The Circular Plastics Cluster has received communication support from ICONS as part of the Horizon Results Booster services.

Find more information in [our factsheet](#) and in [the video](#).