**Draft Project plan for the CEN Workshop on "Determination of 3-hydroxyvalerate content in PHBV by nuclear magnetic resonance"**

**Requests to participate in the Workshop and/or comments on the project plan are to be submitted by**

**2024-05-27 to haraguzo@une.org[[1]](#footnote-1)**

Recipients of this project plan are kindly requested to name all patent rights known to them to be relevant to the Workshop and to make available all supporting documents.

**2024-04-22 (Version 1.1)**

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*Foreword (TO BE DELETED BEFORE THE PUBLICATION OF THE DRAFT PROJECT PLAN)*

*The content of the project plan is structured into chapters. These chapters represent the Workshop project plan’s minimum content, as well as optional but recommended text modules. There is no restriction on the addition of further chapters if this is deemed useful.*

*Colour code:*

* Black font: Fixed text modules. Please do not change.
* Green font: Optional but recommended text modules. Please adjust according to your needs.
* **<Red font>: Placeholder. Please fill in.**
* *Blue font: Explanation. Please delete in the final version.*

Summary

This CEN workshop is a proposal coming from the H2020 project upPE-T, with the aim of transferring the developed technologies and processes to marketable solutions and of spreading the technological advances.

# Status of the project plan

**Draft project plan** for public commenting (Version 1.0)

This draft project plan is intended to inform the public of a new Workshop. Any interested party can take part in this Workshop and/or comment on this draft project plan. Please send any requests to participate or comments by e-mail to **haraguzo@une.org.**

All those who have applied for participation or have commented on the project plan by the deadline will be invited to the kick-off meeting of the Workshop on **2024-06-06**.

# Workshop proposer and Workshop participants

## Workshop proposer

|  |  |
| --- | --- |
| **Person or organisation** | **Short description and interest in the subject** |
| UpPE-T Consortium | This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 953214. The upPE-T project aims upcycling recalcitrant oil-based plastics by bioconversion into biodegradable bioplastic for food and drink packaging production.  A precise structural characterization of polymeric materials is essential in order to build up structure-properties relationships. Regarding the copolymer family, as in the case of poly(3-hydroxybutyrate-co-3-hydroxyvalerate, the quantification of the comonomer ratio is the first step in the characterization of this material, since different compositions give rise to different properties. |

## Other potential participants

This CWA will be developed in a Workshop (temporary body) that is open to any interested party. The participation of other experts would be helpful and is desired. It is recommended that:

* Industry and commerce, companies in the field of plastic manufacturing and packaging.
* Government, regulatory bodies and representatives of the public sector.
* Consumer, specialists in the field of bioplastics.
* PHBV producers/researchers both in academia and industry, academic and research in biotechnology

take part in the development of this CWA.

## Participants at the kick-off meeting

The following persons or organisations already signed up to the kick-off meeting prior to the publication of the draft project plan.

* ASOCIACION EMPRESARIAL DE INVESTIGACION CENTRO TECNOLOGICO DEL CALZADO Y DEL PLASTICO DE LA REGION DE MURCIA (CETEC) - Sergio José Benítez Benítez – Wokshop proposer, Chairman and CWA leader
* ASOCIACION ESPANOLA DE NORMALIZACION (UNE) – Worshop secretary
* ENZYMICALS AG (ENZYMICALS AG)
* DRUSTVO SA OGRANICENOM ODGOVORNOSCU ECO Plastics Beograd CUKARICA (Eco Plastics)
* ASOCIACION PARA LA PROMOCION, INVESTIGACION, DESARROLLO E INNOVACION TECNOLOGICA DE LA INDUSTRIA DEL CALZADO Y CONEXAS DE LA RIOJA (CTCR APIDIT)
* UNIVERSITAET FUER BODENKULTUR WIEN (BOKU)
* TAMPEREEN KORKEAKOULUSAATIO SR (TAU)TAMPEREEN KORKEAKOULUSAATIO SR (TAU)
* LAPPEENRANNAN-LAHDEN TEKNILLINEN YLIOPISTO LUT (LUT University),
* TECNOALIMENTI S.C.P.A. (TCA)
* INSTITUT ZA RAZVOJ I INOVACIJE - IRI (IRI)
* DIGIOTOUCH OU (Digiotouch)
* UNIONE NAZIONALE CONSUMATORI UMBRIA (UNC)
* DIMOS NEAS SMYRNI (MoNS)
* DURUKAN SEKERLEME SANAYI VE TICARETANONIM SIRKETI (CONFECTIONERY)
* CETEC BIOTECHNOLOGY SL (CETBIO)
* UNIVERSIDAD DE ALICANTE (UA)
* BIO-MI DRUSTVO S OGRANICENOM ODGOVORNOSCU ZA PROIZVODNJU, ISTRAZIVANJEI RAZVOJ (BIO-MI)
* VILLANI SPA (VILL)
* MOSES PRODUCTOS SL (MOSES)
* UNIVERSITAET GREIFSWALD (UG)
* Experts after consultation with CEN/TC 249
  + Mrs. Ines Fritz (ASI)
  + Mr. Keneka (NBN)

# Workshop objectives and scope

This workshop is motivated by the currently ongoing Horizon 2020 upPE-T project, which aims upcycling recalcitrant oil-based plastics by bioconversion into biodegradable bioplastic for food and drink packaging production.

upPE-T includes sustainable strategies as an alternative for plastic chemical degradation, improving PE and PET depolymerization through enzymatic engineering to positively impact food and drink packaging recycling rate and achieving the European Union expected impact.

PE and PET waste streams are expected to be turned into raw material to produce biodegradable bioplastics by means of enzymatic degradation and microbial assimilation. In addition, the objectives of the project include simplifying the downstream bioplastic recovery process from cell biomass using an efficient and green extraction approach without the use of toxic solvents.

Finally, together with customers and food and drink brand owners, bio-based end-packaging will be demonstrated and validated to ensure fast market deployment.

Additionally, in order to ensure 100% of PE and PET recyclability, plastic rejections not optimal for microbial bioconversion into bioplastics will be valorized by their use in building applications instead of being sent to incineration or landfilling.

upPE-T is expected to be an important part of the actions for compliance with the European Strategy for Plastics in a Circular Economy. UpPE-T will lead the development of a CWA closely connected to project objectives and the developed technologies and processes in order to bring them closer to the market and to spread technological advances.

## Background

A precise structural characterization of polymeric materials is essential in order to build up structure-properties relationships. Regarding the copolymer family, as in the case of poly(3-hydroxybutyrate-co-3-hydroxyvalerate, the quantification of the comonomer ratio is the first step in the characterization of this material, since different compositions give rise to different properties. In this context, and as far as we are concerned, there is not any standardised methodology for the quantification of the monomer content in PHBV. Here is framed the proposal to use 1H nuclear magnetic resonance (NMR) as a facile and accessible technique for the determination of the comonomer ratio in poly(3-hydroxyburyrate-co-3-hydroxyvalerate).

## Scope

## The planned CEN Workshop Agreement specifies an accessible methodology for the quantification of the comonomer content in poly(3-hydroxybutyrate-co-3-hydroxyvalerate) using nuclear magnetic resonance as analytical tool.

## The planned CEN Workshop Agreement is intended to be used by PHBV producers/researchers both in academia and industry.

## Related activities

The subject of the planned CWA is not at present the subject of a standard. However, there are committees, standards and/or other technical specifications that deal with related subjects and thus need to be taken into account ‑ and involved, where necessary ‑ during this Workshop:

**CEN/TC 249 – Plastics**

The scope of this TC is the standardization of 1) terminology, 2) test methods, 3) specifications, classifications and designation systems, 4) environmental aspects, 5) joining systems and techniques, of plastics, plastic-based materials, semi-finished products and products (thermoplastics, thermosets, degradable plastics, bio-based polymers, thermoplastic elastomers, composites, reinforcement products for plastics, recyclates). Rubber is excluded. Specific end-product related items are also excluded if they are covered by the scope of an existing product TC.

# Workshop programme

## General

The kick-off meeting is planned to take place on 6th June, online.

A total of 2 Workshop meetings (kick-off meeting and Workshop meetings) will be held, during which the content of the CWA will be presented, discussed and approved.

The CWA will be drawn up in English. The CWA will be written in English.

## Workshop schedule

The preliminary Workshop schedule will be as shown in Table 1.

Table 1: Workshop schedule (preliminary)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| **CEN/CENELEC Workshop** | **FEB24** | | | | **MAR24** | | | | **APR24** | | | | | **MAY24** | | | | **JUN24** | | | | **JUL24** | | | | | **AGO24** | | | | **SEP24** | | | | | | **OCT24** | | | | | |
| **Initiation** |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| 1. Proposal form submission and TC response |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| 2. Project plan development |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| 3. Open commenting period on draft project plan (mandatory) |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| **Operation** |  |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |
| 4. Kick-off meeting |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| 5. CWA(s) development |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| 6. CWA(s) finalised and approved by Workshop participants |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| **Publication** |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| 7. CWA(s) publication |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| **Dissemination (see 7)** |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |  | |  |  | |  |  | |  |  | |  |
| **Milestones** |  |  |  |  |  |  |  |  |  |  | |  |  |  |  |  |  | **K** |  |  |  | |  | **V** |  |  |  |  |  |  | **V/A** | |  |  | |  |  | |  |  | | **P/D** |

**K** Kick-off

**V** Virtual Workshop meeting

**A** Adoption of CWA

**P** Publication of CWA

**D** Online distribution of CWA

# Resource planning

The administrative costs of the CEN Workshop will be financed by resources from the upPE-T project. The final document will include the following paragraph: "Results incorporated in this CEN Workshop Agreement have received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 953214”.

Both registration and participation at the CEN Workshop described here are free of charge. The use of electronic meetings will be preferred. Nevertheless, in the case of physical meetings, they will be held in Europe and each participant has to bear his/her own costs for travel, accommodation, and subsistence.

# Workshop structure and rules of cooperation

## Participation in the Workshop

The Workshop will be constituted during the course of the kick-off meeting. By approving this project plan, the interested parties declare their willingness to participate in the Workshop and will be formally named as Workshop participants, with the associated rights and duties. Participants at the kick-off meeting who do not approve the project plan are not given the status of a Workshop participant and are thus excluded from further decisions made during the kick-off meeting and from any other decisions regarding the Workshop.

As a rule, the request to participate in the Workshop is closed once it is constituted. The current Workshop participants shall decide whether any additional members will be accepted or not.

Any new participant in the Workshop at a later date is decided on by the participants making up the Workshop at that time. It is particularly important to consider these aspects:

1. expansion would be conducive to shortening the duration of the Workshop or to avoiding or averting an impending delay in the planned duration of the Workshop;
2. the expansion would not result in the Workshop taking longer to complete;
3. the new Workshop participant would not address any new or complementary issues beyond the scope defined and approved in the project plan;
4. the new Workshop participant would bring complementary expertise into the Workshop in order to incorporate the latest scientific findings and state-of-the-art knowledge;
5. the new Workshop participant would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
6. the new Workshop participant would ensure wider application of the CWA.

All Workshop participants who voted for the publication of the CWA or its draft will be named as authors in the European Foreword, including the organisations which they represent. All Workshop participants who voted against the publication of the CWA, or who have abstained, will not be named in the European Foreword.

## Workshop responsibilities

The Workshop Chair is responsible for content management and any decision-making and voting procedures. The Workshop Chair is supported by the Workshop Vice-Chair and the responsible Workshop secretariat, whereby the Workshop secretariat will always remain neutral regarding the content of the CWA(s). Furthermore, the Workshop secretariat shall ensure that CEN-CENELEC's rules of procedure, rules of presentation, and the principles governing the publication of CWA(s) have been observed. Should a Workshop Chair no longer be able to carry out her/his duties, the Workshop secretariat shall initiate the election of a new Workshop Chair. The list below covers the main tasks of the Workshop Chair. It is not intended to be exhaustive.

* Content related contact point for the Workshop
* Presides at Workshop meetings
* Ensures that the development of the CWA respects the principles and content of the adopted project plan
* Manages the consensus building process, decides when the Workshop participants have reached agreement on the final CWA, on the basis of the comments received
* Ensures due information exchange with the Workshop secretariat
* Represents the Workshop and its results to exterior

The Workshop secretariat, provided by a CEN/CENELEC national member, is responsible for organising and leading the kick-off meeting, in consultation with the Workshop proposer. Further Workshop meetings and/or web conferences shall be organised by the Workshop secretariat in consultation with the Workshop Chair. The list below covers the main tasks of the Workshop secretariat. It is not intended to be exhaustive.

* Administrative and organisational contact point for the Workshop
* Ensures that the development of the CWA respects the principles and content of the adopted project plan and of the requirements of the CEN-CENELEC Guide 29
* Formally registers Workshop participants and maintains record of participating organisations and individuals
* Offers infrastructure and manage documents and their distribution through an electronic platform
* Prepares agenda and distribute information on meetings and meeting minutes as well as follow-up actions of the Workshop
* Initiates and manage CWA approval process upon decision by the Workshop Chair
* Interface with CEN-CENELEC Management Centre (CCMC) and Workshop Chair regarding strategic directions, problems arising, and external relationships
* Advises on CEN-CENELEC rules and bring any major problems encountered (if any) in the development of the CWA to the attention of CEN-CENELEC Management Centre (CCMC)
* Administrates the connection with relevant CEN or CENELEC/TCs

## Decision making process

Each Workshop participant is entitled to vote and has one vote. If an organisation sends several experts to the Workshop, that organisation has only one vote, regardless of how many Workshop participants it sends. Transferring voting rights to other Workshop participants is not permitted. During voting procedures, decisions are passed by simple majority; abstentions do not count.

If Workshop participants cannot be present in the meetings when the CWA or its draft is adopted, an alternative means of including them in the voting procedure shall be used.

# Dissemination and participation strategy



Proposal form submission

The Workshop proposal has been disseminated to the following relevant stakeholders and bodies for their information:

* CEN/TC 249 - Plastics

Open commenting period on draft project plan

The project plan will be disseminated to the following relevant stakeholders and bodies for commenting:

* CEN/TC 249 - Plastics

In addition to the CCMC website, the project plan and the date of the kick-off meeting will be advertised on the upPE-T project webpage (https://uppet.eu/) and its social networks to raise awareness. Interested parties are requested to contribute either through commenting of the project plan (short term) or through Workshop participation (long term).

CWA publication

The final CWA will be disseminated to the following relevant stakeholders and bodies:

* CEN/TC 249 - Plastics

In addition to the CCMC website, the final CWA will be advertised on:

* UpPE-T project webpage
* UpPE-T social media
* Research Gate

# Contacts

* Workshop Chair:

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* Workshop Vice-Chair:

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1. Applications for participating in the Workshop and comments on the project plan that are not received by the deadline do not need to be taken into consideration. Once constituted, the Workshop will decide whether or not to consider the comments received in good time. [↑](#footnote-ref-1)