


Multilayer (Catalyzing the circularity of multilayer plastics)

A Data Management Plan created using DMPonline.be

Creators: Ekaterina Makshina  <https://orcid.org/0000-0003-1461-5084>, bert sels  <https://orcid.org/0000-0001-9657-1710>, Bert Lagrain  <https://orcid.org/0000-0002-9707-1977>

Affiliation: KU Leuven (KUL)

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Principal Investigator: bert sels  <https://orcid.org/0000-0001-9657-1710>

Data Manager: Ekaterina Makshina  <https://orcid.org/0000-0003-1461-5084>, bert sels  <https://orcid.org/0000-0001-9657-1710>, Bert Lagrain  <https://orcid.org/0000-0002-9707-1977>

Project Administrator: bert sels  <https://orcid.org/0000-0001-9657-1710>, Bert Lagrain  <https://orcid.org/0000-0002-9707-1977>

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Project abstract:

In summary, multilayer plastics have been widely used for food packaging and will not be quickly replaced in the coming decades. However, recycling multilayer plastics, in particular the tie layers, is still the most challenging task or in some cases even impossible nowadays. This research proposal, therefore, aims to establish a performant heterogeneous catalytic system in which recycling of multilayer plastic containing tie layers can be realized via multilayer unzipping and selective dissolution, followed by catalytic decarboxylation of the tie layer/polyolefin fraction, with maximum recovery of all polymers that can be again processed towards the same multilayer material.

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DPIA

DPIA

Have you performed a DPIA for the personal data processing activities for this project?

- No

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GDPR

GDPR

Have you registered personal data processing activities for this project?

- No

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Application DMP

Questionnaire

Describe the datatypes (surveys, sequences, manuscripts, objects ...) the research will collect and/or generate and /or (re)use. (use up to 700 characters)

Solely 'primary' data will be gathered of the following datatypes:

(1) 'EXPERIMENTAL' data

(quantitative and qualitative) generated from the research. Reaction parameters and reaction outcomes are collected in a spreadsheet (xls(x)) with all relevant information and uniquely coded. This counts for information from all experimental including reactions, synthesis, characterisation (e.g. as images or data);

(2) 'SIMULATED' data obtained from computational process modeling are kept in software files.

Data are stored, and kept for at least 5 years on Archive drive of CSCE. Manuscripts and supporting info contain the main and important data are obviously stored.

Specify in which way the following provisions are in place in order to preserve the data during and at least 5 years after the end of the research? Motivate your answer. (use up to 700 characters)

1. Considering possible changes in researchers, the supervisor-spokesperson Prof Bert Sels is managing the data. Dr. Ekaterina Makshina is the local manager for databases for CSCE, and execution is done by Admin Katrien Pauwels.
2. Storage capacity/repository
 - during the research: all data will be stored in the cloud via Microsoft OneDrive offered by the KU Leuven
 - after the research: all data do not need intensive transactional operations and will be further stored in the cloud at the KU Leuven.
 -
 - The data is automatically backed up and only accessible to CSCE researchers who are involved in this research

What's the reason why you wish to deviate from the principle of preservation of data and of the minimum preservation term of 5 years? (max. 700 characters)

No personal data will be collected in this project.

We will follow the principle of preservation of data and of the minimum preservation term of 5 year

Are there issues concerning research data indicated in the ethics questionnaire of this application form? Which specific security measures do those data require? (use up to 700 characters)

N/A

Which other issues related to the data management are relevant to mention? (use up to 700 characters)

none

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FWO DMP (Flemish Standard DMP)

1. Research Data Summary

List and describe all datasets or research materials that you plan to generate/collect or reuse during your research project. For each dataset or data type (observational, experimental etc.), provide a short name & description (sufficient for yourself to know what data it is about), indicate whether the data are newly generated/collected or reused, digital or physical, also indicate the type of the data (the kind of content), its technical format (file extension), and an estimate of the upper limit of the volume of the data.

				Only for digital data	Only for digital data	Only for physical data
Dataset Name	Description	New or reused	Digital or Physical	Digital Data Type	Digital Data format	Digital data volume (MB/GB/TB)
Analytical measurements	Analysis of solid catalysts and reaction products (GC, GC-MS, NMR, HPLC, IR, TGA, DSC, UV)	Generate new data, Reuse existing data	digital	experimental	.txt .csv .xls .pdf	• <100MB/
Liquid products samples and catalysts	Product samples in 10 ml glass vials	Generate new data, Reuse existing data	physical	/	/	/
Solid products samples and catalysts	solids in 10 ml plastic vials	Generate new data, Reuse existing data	physical	/	/	/
Experimental data (generated) quantitative	Processing of measured, experimental, data	Generate new data, Reuse existing data	Digital	Compiled/aggregated data	.xls	<100 GB
Literature study	Literature summary and organization of literature references	Generate new data, Reuse existing data	Digital	Compiled/aggregated data	.ris .txt .pdf .docx .pptx	<100 GB
Reporting data	Meeting reports, project reports	Generate new data, Reuse existing data	Digital	Compiled/aggregated data	.pptx .docx	<100 GB

If you reuse existing data, please specify the source, preferably by using a persistent identifier (e.g. DOI, Handle, URL etc.) per dataset or data type:

1) The literature study. Data will be compiled from existing data available through journal publishers websites (DOI or URL) and exported as RIS, TXT or PDF files to online (or desktop) library manager or reference manager (Google Scholar, EndNote, Mendeley or Zotero). Processed literature data will be summarized in a review document (.docx, .xls, .pptx)

2) several physical samples (liquid and solid) are available from a previous project (Moonshot Multilayer cSBO) and will be reused in testing and analysis

3) existing analytical data, experimental data, literature study and reports available from a previous project (Multilayer cSBO) will be reused in current project. Raw analytical data are stored on internal KUL J-drive. Processed experimental, literature and reporting data are stored in the cloud on a OneDrive folder shared between members of CSCE involved in current project. Reports and presentation from project meetings are stored on the OneDrive folder as well

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? Describe these issues in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Will you process personal data? If so, briefly describe the kind of personal data you will use in the comment section. Please refer to specific datasets or data types when appropriate.

- No

Does your work have potential for commercial valorization (e.g. tech transfer, for example spin-offs, commercial exploitation, ...)? If so, please comment per dataset or data type where appropriate.

- Yes

This work might have potential for tech transfer and valorization. Therefore, there will be restrictions for data disclosure as it may contain IP-sensitive information. All data will be subjected for their patentability prior to any publication. If applicable, patent applications will be filled. IP management will be conducted by the CSCE Innovation Manager Bert Lagrain. Patent applications will be made for relevant innovative procedures/products. To avoid publication of IPR sensitive results, Dr Lagrain will be informed of anticipated publications.

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material/Data transfer agreements/ research collaboration agreements)? If so, please explain in the comment section to what data they relate and what restrictions are in place.

- No

Are there any other legal issues, such as intellectual property rights and ownership, to be managed related to the data you (re)use? If so, please explain in the comment section to what data they relate and which restrictions will be asserted.

- No

2. Documentation and Metadata

Clearly describe what approach will be followed to capture the accompanying information necessary to keep data understandable and usable, for yourself and others, now and in the future (e.g., in terms of documentation levels and types required, procedures used, Electronic Lab Notebooks, README.txt files, Codebook.tsv etc. where this information is recorded).

1. Regular set of raw experimental data will be collected per every experiment. Experiments will be classified based on date and type of experiment.
2. Additional document (a living document, as .xls or .ppt) will contain a detailed summary of every experiment to keep track of experimental details.
3. Another overview file (ppt) explains the organization of data storage (raw files, processed files, progress report files).

Will a metadata standard be used to make it easier to find and reuse the data? If so, please specify (where appropriate per dataset or data type) which metadata standard will be used. If not, please specify (where appropriate per dataset or data type) which metadata will be created to make the data easier to find and reuse.

- Yes

The metadata for the data in this project entails:

- Creator of the dataset
- Name of the dataset
- File type of the dataset (depending on the employed software different file formats will be generated).
- Date of generation
- Data type (experimental or modelled)
- Software employed to generate the data (in case of modelled)

3. Data storage & back-up during the research project

Where will the data be stored?

All data will be stored in a cloud service offered by the university:

- J-drive is used at CSCE for raw data collection and transfer
- Personal I-drives will be used by CSCE members working on the project to have a personal back-ups of their files
- OneDrive of KUL is used as storage and exchange platform of all data related to project
- General reports and presentations of meetings will be copied to the Multilayer OneDrive folder

How will the data be backed up?

The experimental data will be first stored on the university's central servers (KU Leuven ICTS) with automatic daily back-up procedures (J-drive, I-drive).

Processed experimental data, meeting presentations, meeting reports will be stored in the Cloud using Microsoft OneDrive with continuous back-up

Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely.

If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.

- Yes

How will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?

In the services offered by the university (Local server or Cloud via OneDrive of KUL) the access to the data can be strictly authorized to only researcher involved directly in project execution.

The Multilayer OneDrive folder will be created and managed by CSCE project responsible and will have following structure:

1. 1 protected folder containing all data - only manager (and PI) can consult and add/modify data
2. 1 folder with read-only rights for researchers to check data collected by team - researchers can see data, copy data to their local storage space, but can't add or modify
3. 1 folder with "edit" rights for researchers as "input" folder - researcher can deposit new data; manager needs to copy manually data from input to other 2 folders, which will be done every month

What are the expected costs for data storage and backup during the research project? How will these costs be covered?

during the course of the project - there are no additional costs related to the data storage and backup during the course of the project

4. Data preservation after the end of the research project

Which data will be retained for at least five years (or longer, in agreement with other retention policies that are applicable) after the end of the project? In case some data cannot be preserved, clearly state the reasons for this (e.g. legal or contractual restrictions, storage/budget issues, institutional policies...).

Retained data:

Publications (experimental manuscripts, review papers, PhD, master thesis)

Regular progress and final reports (as ppt and doc files)

Final processed experimental data (as xls files)

Not retained data:

Raw experimental data (as csv, txt, xls,.. format) - easy and low cost reproducibility

Where will these data be archived (stored and curated for the long-term)?

The data will be stored on the university's central servers for at least 10 years, conform the KU Leuven RDM policy:

K-drive of CSCE: K:\SET-CSCE-Archive-Data-D0771

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

K-drive long-term storage costs are covered by project budgets. Running projects covers the costs of finished projects.

5. Data sharing and reuse

Will the data (or part of the data) be made available for reuse after/during the project? In the comment section please explain per dataset or data type which data will be made available.

- Yes, in a restricted access repository (after approval, institutional access only, ...)

Data will be available only in a format of publications (PhD, IP, master thesis) or strictly for internal use within research group internally

If access is restricted, please specify who will be able to access the data and under what conditions.

- In a restricted access repository
- Upon request by mail and approval by responsible PI (main data owner)
- Via publications, patents

Are there any factors that restrict or prevent the sharing of (some of) the data (e.g. as defined in an agreement with a 3rd party, legal restrictions)? Please explain in the comment section per dataset or data type where appropriate.

- Yes, Intellectual Property Rights

Like reported in question 1.5, this work might have potential for tech transfer and valorization. Therefore, there will be restrictions for data

disclosure as it may contain IP-sensitive information. Note, this will not be applicable on the reference dataset, however it might be applicable on the experimental, analytical and sample storage dataset.

Where will the data be made available? If already known, please provide a repository per dataset or data type.

The experimental and analytical data will be stored in a restricted access repository. This data and insights will be, later, made available via publications or patents, which are accessible via LIMO (KU Leuven) and search engines like patentscope. More detailed information and data can be shared upon request by mail (corresponding author).

When will the data be made available?

Upon publication of the research results

Which data usage licenses are you going to provide? If none, please explain why.

N/A

Do you intend to add a PID/DOI/accession number to your dataset(s)? If already available, you have the option to provide it in the comment section.

- Yes

Once the research results will be published, the DOI will be linked to the dataset including the project results.

What are the expected costs for data sharing? How will these costs be covered?

Publications in specific sources might be a subject of additional costs that will be payed from running projects budget.

6. Responsibilities

Who will manage data documentation and metadata during the research project?

The postdocs and PhD students will collectively manage their own data and data documentation during

Who will manage data storage and backup during the research project?

Project manager will take responsibility to organize data collection (set-up OneDrive), coordinate of data management activity (incl. manual back-ups) and assist people involved in the project in proper handling of collected data (documentation of data, sharing data etc.) Professor will take a helicopter view on data management (assign roles, specify access permissions etc.). Project manager of current project will be always backed-up by other group members involved in project management (IOF valorization manager Bert Lagrain, PI Bert Sels)

Who will manage data preservation and sharing?

Research manager (Ekaterina Makshina), main PI/professor (Bert Sels)

Who will update and implement this DMP?

The end responsibility for updating and implementing the DMP is with the supervisor (promotor) and project manager.

