Development of novel amphiphilic copolymers based on polyolefins and renewable polymers (PLA/ Cellulose) for use in new applications such as 3D printing, compatibilisation and common processing methods.

A Data Management Plan created using DMPonline.be

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Funder: Fonds voor Wetenschappelijk Onderzoek - Research Foundation Flanders (FWO)

Template: FWO DMP (Flemish Standard DMP)

Grant number / **URL:** 1159223N

ID: 194421

Start date: 01-11-2022

End date: 31-10-2026

Project abstract:

Polyolefins (POs) are currently indispensible in our daily lives, representing about 60% of the produced polymer amount. They are cheap, versatile and easy to process. However, they are subject to a notable property gap. Due to their hydrocabron make-up, POs contain a low surface tension/interfacial adhesion and a fast crystallization mechanism. Both properties hinder their use in: novel processing techniques such as 3D printing, compatibilisation, and blending. In order to increase POs' polarity and control their crystallization mechanism, this project focusses first on the creation of functionalised POs with polar groups (FPOs) using a non-degrading protocol. Second, these FPOs form the foundation for creating novel amphiphilic copolymers based on polyolefins and renewable polymers (PLA/ Cellulose). Finally, the made molecules will be implmented in common processing methods and polymer blend compatibilisation. Every step of the project is followed by an in depth characterisation of the produced samples on molecular and macromolecular level.

Last modified: 19-01-2023

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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 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)	Physical volume
		Generate new data	*Please choose from the following options:* • Digital • Physical	*Please choose from the following options:* • Observational • Experimental • Compiled/aggregated data • Simulation data • Software • Other • NA	*Please choose from the following options:* • .por, .xml, .tab, .cvs,.pdf, .txt, .rtf, .dwg, .gml, … • NA	*Please choose from the following options:* • <100MB • <1GB • <100GB • <1TB • <5TB • <10TB • <50TB • >50TB • NA	
DSC	DSC scans of Functionalised PO samples	Generate new data	Digital	• Experimental	pdf	• <100MB	
Physical sample storage	Physical sample storage	Generate new data	Physical	• Other	NA	NA	2 kg
FTIR	FTIR scans of Functionalised PO samples	Generate new data	Digital	• Experimental	csv	<1GB	
Rheology	rheological curve development of FPOs	Generate new data	Digital	• Experimental	csv	<1GB	
CA	CA measurements of samples	Generate new data	Digital	• Experimental	ascii	<1GB	
GCMS	GCMS measurements of Preliminary samples	Generate new data	Digital	• Experimental	csv	<1GB	
GPC	GPC measurements of Preliminary samples	Generate new data	Digital	• Experimental	csv	<1GB	

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:

N.A.

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

na

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

na

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.

- No

na

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

na

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

na

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) DSC:
- methods and masses are noted and summarized in a word document
2) physical samples:
- Summarizing Excel file with an overview of recipe components and volumes
3) FTIR, GCMS, CA and GPC:
- Summarizing Excel file with an overview of all samples measured according to date

4) Rheology:
- Internal storage of data on software with overview off all measurements done with same parameter settings+ copy of the mentioned as excel file

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.

- No

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

Where will the data be stored?

The research group has a storage capability of around 20TB made by HDD both portable and not.
KULeuven has also a One Drive with a storage capability of 2TB per person. The data will be stored on both during my research and on the HDDs during the 5 years after the end of it. During the research years I will co-manage these data together with prof. Ginzburg. After the end of my research project, the management responsibility of the data will pass to Prof. Ginzburg.
During the research: data will be stored on the personal computer of the researcher, a HDD and on the kuleuven OneDrive account of the researcher.
After publication of an article: the data will be stored on the central servers of the university.

How will the data be backed up?

The kuleuven OneDrive account of the researcher (daily basis)
An external HDD (monthly basis)

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

The total capacity of the HDD within our research group is around 20 TB and the OneDrive from KU Leuven is 2 TB per person

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

The computer of the individual researcher is password protected.
The OneDrive account has a two-factor authentication.
The HDD will be with the researcher or in a locked cupboard in the office (office is also locked).

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

Extra portable HDD can be purchased (150 euros for 5 TB), extra costs covered by the PPE/SMaRT group.

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...).

All data will be retained for the expected 5 year period after the end of the project.

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

The data will be stored on the university's central servers.

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

No additional costs are expected. All necessary storage will, as per standard, be provided by KUL_PPE.

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, …)

After a publication, all datasets will be made available upon request, to whoever requests the data.
Unpublished data will only be accesible to the involved researcher and Prof. Ginzburg as it may be used in future projects.

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

Unpublished data will only be accesible to the involved researcher and Prof. Ginzburg as it may be used in future projects.

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.

- No

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

Upon request by mail

When will the data be made available?

After a publication, all datasets will be made available upon request, to whoever requests the data.
Unpublished data will only be accesible to the involved researcher and Prof. Ginzburg as it may be used in future projects.

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

After a publication, all datasets will be made available upon request, to whoever requests the data.
Unpublished data will only be accesible to the involved researcher and Prof. Ginzburg as it

may be used in future projects.

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.

- No

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

FWO budget will be used to cover open acces datasharing.

6. Responsibilities

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

The researcher is responsible for the DMP.

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

The researcher as well as KU Leuven ICTS managing OneDrive will be responsible for storage and back up of data during the project.

Who will manage data preservation and sharing?

Prof. Ginzburg as well as KU Leuven ICTS managing OneDrive will be responsible for storage and back up of data during the project.

Who will update and implement this DMP?

The researcher as well as prof. Ginzburg.