Corsslinked PVDF as a platform material for membrane separations in extreme conditions

A Data Management Plan created using DMPonline.be

Creators: Laurens Rutgeerts, Ivo Vankelecom

Affiliation: KU Leuven (KUL)

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Project abstract:

Scheidingen in extreme omstandigheden (bijvoorbeeld hoge/lage pH, mogelijk in combinatie met solventen) zijn enorm uitdagend en resulteren in heel wat processtromen die momenteel niet kunnen gevaloriseerd worden, onbehandeld blijven of behandeld dienen te worden met processen die een aanzienlijke belasting voor het milieu veroorzaken. Membraantechnologie zou een energie-efficiënte valorisatie van dergelijke stromen kunnen toelaten zonder dat een afvalstroom ontstaat, op voorwaarde dat er membranen kunnen worden ontwikkeld die een uitstekende stabiliteit combineren met een goede scheidingsprestatie. Dit project heeft tot doel de unieke gecombineerde zuur/base- en oplosmiddelstabiliteit van gepatenteerde vernette PVDF-membranen te vertalen naar een marktklare, veelzijdige en op maat gemaakte set membranen via een dubbele strategie. In dit C3-project zal het vernette PVDF-membraan worden opgeschaald door gebruik te maken van roll-to-roll membraanproductieapparatuur, terwijl de crosslinking-procedure zal worden afgestemd om de membraanstabiliteit te maximaliseren. Tegelijkertijd zullen gemakkelijke en schaalbare membraanmodificatiestrategieën worden toegepast, zodat een veelzijdig platform van membranen op basis van vernet PVDF wordt verkregen dat gemakkelijk kan worden aangepast aan een gewenste scheiding in redoxflowbatterijen, gasscheidingen, extreme pH-waterbehandeling, solventen en recuperatie van opgeloste stoffen.

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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.

Dataset name / ID	Description	New or reuse	Digital or Physical data	Data Type	File format	Data volume	Physical volume
		Indicate: ***N****(ew data) or* ***E****(xisting data)*	Indicate: **D**(igital) or **P**(hysical)	Indicate: **A**udiovisual **I**mages **S**ound **N**umerical **T**extual **M**odel **SO**ftware Other (specify)		Indicate: <1GB <100GB <1TB <5TB >5TB NA	
Membrane preparation and upscaling parameters	Polymer concentrations, solvent types/mixtures, casting parameters, additives	New	D	N	.xlxs	<100GB	
Membrane performance	flux, selectivity	New	D	N	.xlxs	<100GB	
Microscopy images	SEM, TEM, AFM images	New	D	I	.tif	<1TB	
Literature	background literature	E	D	T	.pdf	<100GB	

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:

DOI

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, refer to specific datasets or data types when appropriate and provide the relevant ethical approval number.

- No

Will you process personal data? If so, please refer to specific datasets or data types when appropriate and provide the KU Leuven or UZ Leuven privacy register number (G or S number).

- 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.

- No

Do existing 3rd party agreements restrict exploitation or dissemination of the data you (re)use (e.g. Material or 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

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. .xlsx files will be organized in folders and subfolders to generate a clear and easy-to-use data library
2. For microscopy images the following information will be noted: dimensions, image type, bit-depth, pixel sizes and microscope settings

Will a metadata standard be used to make it easier to find and reuse the data?
If so, please specify which metadata standard will be used.

If not, please specify which metadata will be created to make the data easier to find and reuse.

- No

The files containing the data will be named apropriately and will be stored in folders and subfolders to generate a clear and easy-to-use data library.

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Sharepoint online
- Shared network drive (J-drive)

How will the data be backed up?

- Standard back-up provided by KU Leuven ICTS for my storage solution

Is there currently sufficient storage & backup capacity during the project?

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

- No (explain solution below)

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

The folders on Ondrive and the internal KU Leuven servers can only be accessed through 2-step verification (password and KU Leuven authenticator)

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

Ondrive is free of charge.
The storage cost for the J Drive is 500 euro/Tb.
These costs are covered by the general group funds.

Data Preservation after the end of the Research Project

Which data will be retained for 10 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 preserved for 10 years according to KU Leuven RDM policy

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

- Large Volume Storage (longterm for large volumes)

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

The costs for data preservation on the internal K drive is 50 euro/Tb

Data Sharing and Reuse

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

- Yes, as restricted data (upon approval, or institutional access only)

The data will be made available through the publication of research findings throughout the project and in pattents following up on the project.

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

The datasets will be attached as supplementary information together with the publication of the research results. Therefore, it will be available to anyone for any purpose, provided that they give appropriate credit to the creators.

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 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.

The data will be made available through the publication of research findings throughout the project and in pattents following up on the project.

When will the data be made available?

- Upon publication of research results

Which data usage licenses are you going to provide?

If none, please explain why.

- CC-BY 4.0 (data)

Do you intend to add a persistent identifier (PID) to your dataset(s), e.g. a DOI or accession number? If already available, please provide it here.

- No

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

Currently, there are no expected costs for data sharing.

Responsibilities

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

Cédric Van Goethem

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

Cédric Van Goethem

Who will manage data preservation and sharing?

Cédric Van Goethem

Who will update and implement this DMP?

Ivo Vankelecom