Plan Overview

A Data Management Plan created using DMPonline.be

Title: Enantioselective interactions on chiral nanopatterned surfaces

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Template: FWO DMP (Flemish Standard DMP)

Project abstract:

Homochiral surfaces serve as crucial platforms not only for enantiomeric separations and asymmetric heterogeneous catalysis but also as experimental grounds for investigating the expression, transmission, and amplification of chirality on solid surfaces from the bottom up. While covalent bond-based chiral modification of solid substrates offers high stability, it remains relatively underexplored, particularly from a nanoscale patterning standpoint. This underscores the necessity for developing systematic approaches for chiral covalent surface modification and conducting comprehensive nanoscale characterization. Surfaces patterned with chiral features at sub-5-nanometer periodicities hold promising potential in chiral separations, sensing, and catalysis. Moreover, exploring the adsorption and self-assembly of organic molecules on such patterned surfaces will yield valuable insights into the mechanisms of chiral transmission from the surface to surface-bound entities, a critical aspect in understanding enantioselective adsorption. The project aims to devise systematic methodologies for crafting patterned surfaces with precise control over the arrangement of chiral functional groups and to leverage these surfaces for conducting proof-of-concept experiments on enantioselective self-assembly.

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Enantioselective interactions on chiral nanopatterned surfaces
Application DMP

Questionnaire

The questions in this section should only be answered if you are currently applying for FWO funding.
Are you preparing an application for funding?

- No

Enantioselective interactions on chiral nanopatterned surfaces
DPIA

DPIA

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

- Not applicable

Enantioselective interactions on chiral nanopatterned surfaces
GDPR

GDPR

Have you registered personal data processing activities for this project?

- Not applicable

Enantioselective interactions on chiral nanopatterned surfaces
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
		Please choose from the following options: • Generate new data • Reuse existing 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, .csv,.pdf, .txt, .rtf, .dwg, .gml, … • NA	*Please choose from the following options:* • <100MB • <1GB • <100GB • <1TB • <5TB • <10TB • <50TB • >50TB • NA	
STM	Scanning tunneling microscopy data	Generate new data	Digital	• Observational • Experimental • Compiled/aggregated data • Simulation data • Software	.mi, .spm, .tif, .por, .asc	<1TB	
AFM	Atomic force microscopy data	Generate new data	Digital	• Observational • Experimental • Compiled/aggregated data • Simulation data • Software	.spm, .txt, .jpg, .opju, .xlsx	<1TB	
Raman	Raman spectroscopy data	Generate new data	Digital	• Observational • Experimental • Compiled/aggregated data • Simulation data • Software	.txt, .tvb, .csv	<100GB	
EC	Electrochemistry data	Generate new data	Digital	• Observational • Experimental • Compiled/aggregated data • Simulation data • Software	.txt, .nox, .opju	<100GB	
Experimental protocols, results, conclusions. Analyzed papers	Experimental protocols, results, conclusions. Analyzed papers	Generate new data	Physical				Lab Note Book
Experimental protocols, results, conclusions. Analyzed papers	Figures, datasets, drafts of research papers	Generate new data	Digital	• Observational • Experimental • Compiled/aggregated data	.docx, .pptx, .pdf, .jpg, .txt	<1TB	

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:

The current research project does not reuse existing data

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.

- No

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).

All obtained data will be labeled using an efficient method, allowing rapid identification and reuse. Besides labeling, tables summarizing all experiments will be provided. These tables will contain the following: the date of data acquisition, sample description (labeling, compound names, concentrations, fabrication protocols), and the correct measurement parameters (type of instrument and substrate). Each table will be followed by a brief conclusion of the reported results and possible follow-up experiments. These tables and reports will be kept in the same folder where the data is stored

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

No metadata standard will be used. Necessary documentation on data creation will be included in the same folder as the dataset. Metadata generated automatically by the measurement setup is embedded in the microscopy/spectroscopy data. Metadata generated during data analysis includes analysis protocols with necessary comments to help users understand the process and modify parameters as needed.

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

Where will the data be stored?

- Personel drive (I-drive) provided by KU Leuven.
- OneDrive (KU Leuven)
- Portable hard drive

Data of published papers will be stored in KULeuven Research Data Repository (RDR)

How will the data be backed up?

The data will be backed-up weekly on a portable hard drive and on the KU Leuven One drive.
The I-drive back-up is provided by KU Leuven ICTS.

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

Storage and backup capacity is already present. It can be extended further by purchasing additional portable hard drives or cloud data volumes.

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

The KU Leuven servers (OneDrive and I-drive) where the data will be stored are restricted to authorized users. Folders are only shared with relevant personnel. The portable hard drive will be kept in the KU Leuven buildings which have restricted access to authorized personnel only.

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

Additional costs may include the purchasing of further portable hard drives (2TB for 169euro), which will then be covered by the personal bench fee. KU Leuven personnel have a standard OneDrive capacity of 250 GB, which can be extended if necessary.

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 preserved for 10 years according to KU Leuven RDM policy

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

- KU Leuven RDR
- 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 long-term data storage of ICTS costs approximately 150 euros per year per 2TB. This storage has been set up for the research group, the shared cost will depend on the actual data generated from this project.

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 that are published will be made available via the KU Leuven Research Data Repository.

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

The data will continue to be stored in a protected environment, similar as to before the end of the project. However, requests to access the data can be made via email to
the promotor or Postdoc, who will decide upon this request after consultation with the promotor and co-authors of articles and after the possible receiver has signed a
data sharing agreement.

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.

- KU Leuven RDR (Research Data Repository)

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.

Upon agreement and proper request, all the data licenses will be provided.

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

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

How data will be shared, will depend upon the type of the requested data. Data will always be shared in a protected environment; after the receiver signed a data sharing agreement. The costs will be covered by my personal bench fee

6. Responsibilities

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

The responsible person during the project is the applicant himself, under supervision of the promoter

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

The responsible person during the project is the applicant himself, under supervision of the promoter

Who will manage data preservation and sharing?

The responsible person during the project is the applicant himself, under supervision of the promoter. After completion of the project, the responsible will be the promotor

Who will update and implement this DMP?

Both the applicant and the promotor bear the end responsibility for updating and implementing this DMP.