H2020 Grant Agreement: 860775

Project Acronym: MONPLAS

Project title: Monitoring Micro- and Nanoplastics

DATA MANAGEMENT PLAN

Design, fabrication and demonstration of an optofluidic chip for characterizing microplastics

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History of edits:		
Version	Date	Ammendments:
v1.0	21/05/2021	Initial DMP draft based on DMPonline
vN+1		*e.g. Treat all RESEARCH OUTPUTS as FAIR & open "data"*
vN+2		*e.g. Explore converting DMP to machine actionable DMP*

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AMBITION for DATA MANGEMENT

The ultimate ambition for this DMP is to maintain a "*living document*" as a research tool, that supports *optimal transparency*, *reproducibility*, and *re-use* of the research *outputs*.

Ultimately, this Data Management Plan (v1.0) should evolve into a *Digital Outputs Management Plan*, treating the research outputs of this project as "*data*", and seeking open file formats, open protocols and pipeline to *make the outputs FAIR and Open*, in full synergy with the MONPLAS Disclosure protocols, and Intellectual Property Right (IPR) exploitation, by referring to MONPLAS Exploitation Management Committee & the Dissemination Committee.

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Project Description

Microplastic pollution is possibly one of the greatest environmental problems facing our lives. Current state-of-the-art systems for measurement and analysis of microplastics are bulky, mainly non-portable and expensive. In search of reliable, low-cost and disposable devices for the detection of microplastic particles in beverage samples, I aim to design and fabricate a compact system based on a multimodal optofluidic chip combining different optical measurement techniques such as diffuse reflection spectroscopy, scattering and Raman spectroscopy. My work is situated in the framework of the EU-funded ITN project with acronym MONPLAS (The training of early-stage researchers for the development of technologies to MONitor concentrations of micro and nanoPLAStics in water for their presence, uptake and threat to animal and human life). The detection concerns the identification of the present plastic types together with their respective concentrations. A proof of concept set-up of the developed system demonstrating the online monitoring of microplastic particles in water samples is the major expected accomplishment of this project.

Data Collection

What data is expected to be collected or created?

Data Type	Volume	Storage/Dissemination	Expiration	Format	Type
Literature	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.pdf	Reused
Schemes of the Optical systems used and searched	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.png .jpg	Reused and created
Raman setup parameters for different polymers in various particle sizes	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.mat .png .xlsx .csv	Created
Software files that comprehend the optical system design and the optimization of the optics for this system.	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.Zmx .Zar	Created
CAD files used during the design and simulation process of the prototype and the microfluidics chip.	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.DWG .DXF .DWF	Created

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Data collected from the calibration and testing of the elements and the proof of concept	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.xlsx .csv .mat .png .txt	Created
Protocols, reagents, experiment design, results, analysis of the results	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.xlsx .csv .r .mat .pdf Other formats	Reused and Created
Test samples characterization with different techniques	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	Formats of the instruments used	Created
Setup control, acquisition and analysis code	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.mat .iv	Reused and Created
Publications, PhD reports, PhD thesis	MB	VUB SharePoint, B-Phot server, and Personal hard drive	N/A	.pdf	Created

How will the data be collected or created?

- The data will be created during the simulation using various software packages and collected during the measurement using benchmark instruments and the proof-of-concept device.

Documentation and Metadata

What documentation and metadata will accompany the data?

- Open metadata is a priority to be resolved for the next version following community standards where they exist spectroscopy standard ontologies and vocabularies will be a priority for the next version, following further research.

Ethics and Legal Compliance

How will you manage any ethical issues?

- Not applicable.

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How will you manage copyright and Intellectual Property Rights (IPR) issues?

- The Vrije Universiteit Brussel owns the data and intellectual property rights. If appropriate, potential IP will be discussed with the IPR officers of VUB's tech transfer office. After the discussion with the IPR officers of VUB's tech transfer office some data/results might be patented or subject of other type of protection. The data subject to publication will be submitted to an open access repository, such as Zenodo with a persistent identifier as DOI under a CC BY 4.0 license. The data collected through literature review and repository search will be cited accordingly. The data irrelevant to publication will be stored in B-PHOT server for a period of 10 years and licensed with CC0 and shared upon request and Backed up in VUB Archive (currently under construction). If a different License type is required, it will be disclaimed in future versions of this document.

Storage and Backup

How will the data be stored and backed up during the research?

- All data will be stored on B-PHOT's data server.
- During the research time the data will be stored in a personal hard drive as it is used.
- Backups will be performed via the VUB SharePoint Drive.
- The volume of data generated during the project is estimated to be no more than 10 GB. Currently, B-PHOT has a capacity of 20 TB per project and VUB SharePoint has capacity of 5TB per project.

How will you manage access and security?

- To secure and regulate the access to the project data. The storage system uses the authentication tools provided by the VUB and the B-PHOT's ICT team. An example of this is an assigned user and password, where the password is modified periodically.
- For the long-term storage, all data will be archived on the B-PHOT's storage servers and VUB's Archive (currently under construction) for backup.

Selection and Preservation

Which data are of long-term value and should be retained, shared, and/or preserved?

- All data will be retained for the expected 10-year period after the end of the project. Once published, the main data and conclusions will also be available for the scientific community through Zenodo, which is an open access repository with a DOI Identifier.

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What is the long-term preservation plan for the dataset?

- The necessary storage and backup space are already available today. B-PHOT is responsible for its storage space and regularly updates its capacity through its own financial means. For the backup, the project relies on VUB Archive (currently under construction).

Data Sharing

How will you share the data?

- The data subject to publication will be linked in the publication of the research results and available for everyone through the open-access repository Zenodo.
- For the detailed measurement data, all B-PHOT researchers and collaborating partners of B-PHOT will have direct access.
- MONPLAS researchers can ask data upon a motivated request.
- External researchers can also ask data after publication and upon a motivated request.

Are any restrictions on data sharing required?

- Full disclosure of research results in the interest of optimal societal impact requires timing the disclosure intelligently and in consultation with the MONPLAS Exploitation Management Committee ("EMC") and basic principles of IPR outlined by the Research and Dissemination VUB Officers

Responsibilities and Resources

Who will be responsible for data management?

The research team will be responsible of the execution of the DMP, always with the assistance of the Research and Data Management officers of VUB following the guidelines of the MONPLAS

What resources will you require to deliver your plan?

VUB and B-PHOT already count with the infrastructure for the collection, analysis, and storage of the Data. Beside this, additional resources will be used to enhance the findability, such as Data repositories and Research Journals publications. If needed, another media of dissemination.

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