

Data Management Plan

Recyclable magnetic plasmonic bimetallic nanomaterials 25-15590S

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Based on	Common DSW Knowledge Model, 2.6.13 (dsw:root:2.6.13)
Project phase	Before Submitting the DMP
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Data Management Plan created in Data Stewardship Wizard «ds-wizard.org»

HISTORY OF CHANGES		
Version	Publication date	Changes
<i>There are no named versions</i>		

Contributors

The following contributors are related to the project of this DMP:

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Projects

We will be working on the following projects and for those are the data and work described in this DMP.

Recyclable magnetic plasmonic bimetallic nanomaterials enveloped by smart polymers for SERS-detection and removal of selected pollutants from water

Acronym	N/A
Start date	2025-01-01
End date	2027-12-31
Funding	Grantová Agentura České Republiky : 25-15590S (granted)

Advanced bimetallic nanomaterials, possessing plasmonic and magnetic properties, enveloped

by a layer of stimuli-responsive polymers ("smart" polymers) will be developed in the framework

of the proposed project. Subsequently, these nanocomposites will be used in detection of selected pollutants via surface enhanced Raman spectroscopy (SERS) and concomitantly in removal of such pollutants from aqueous solution owing to ferro-/ferri-magnetic component. Selected environmental pollutants that are going to be monitored and removed are hormones and antibiotics; reasoning is obvious: negative impact on eco-system and growing resistance of

bacteria to the frequently employed antibiotics, respectively. The selected pollutants will be reversibly attached to the nanocomposite surface via chemical interaction with the polymer layer. In ideal case, not only the detection of selected pollutants in very low concentrations (nMfM)

and their separation from the polluted solution, but also recycling of nanocomposites and preconcentrate formation of pollutants in a different solution will be enabled.

1. Data Summary

Instrument datasets

The following instrument datasets will be acquired in the project:

- **spectra, images**

This dataset will be collected by experts in the project, with our own equipment.

The equipment is very well described and known.

Other researchers working in the same field of research could be interested in using this data.

Re-used datasets

We identified the following reference datasets considered for potential re-use:

- scientific articles on Web of Science

It is available via: www.webofscience.com/wos/woscc/basic-search.

We identified the following non-reference datasets considered for potential re-use:

- none

Data formats and types

We will be using the following data formats and types:

- [Comma-separated Values](#)

It is a standardized format. This is a suitable format for long-term archiving. We will have only a small amount of data stored in this format.

2. FAIR Data

2.1. Making data findable, including provisions for metadata

- **csv files as for spectra; images in tiff and/or jpeg; detailed protocols of syntheses (published)**

The distributions will be stored in:

- Our institutional repository.

There are the following 'Minimal Metadata About ...' (MIA...) standards for our experiments:

- physico-chemical characterization, protocols of synthesis, successful application of nanomaterials, potential biological impact

We will use an electronic lab notebook to make sure that there is good provenance of the data analysis.

We made a SOP (Standard Operating Procedure) for file naming. Files are named according to the sample types and dates. We will be keeping the relationships between data clear in the file names. All metadata contained in the file names will also be included in the corresponding metadata records.

2.2. Making data openly accessible

We will be working with the philosophy *as open as possible* for our data.

All of our data can become completely open over time.

Data that is not legally restrained will be released after a fixed time period (embargo period will be given till publishing a manuscript), unconditionally.

Metadata will be openly available. Metadata will be available in a form that can be harvested and indexed (managed by the used repository / repositories).

We have a consortium agreement that arranges Intellectual Property.

For our produced data, conditions are as follows:

- **csv files as for spectra; images in tiff and/or jpeg; detailed protocols of syntheses** (published)

The distributions will be stored in:

- Our institutional repository. It will be *Open* (shared with anyone).

A user of this data can use it without any specific software.

The dataset will published after all our processing has finished.

2.3. Making data interoperable

We will be using the following data formats and types:

- [Comma-separated Values](#)

It is a standardized format.

2.4. Increase data re-use (through clarifying licenses)

The metadata for our produced data will be kept as follows:

- **csv files as for spectra; images in tiff and/or jpeg; detailed protocols of syntheses** (published) – This data set will be kept available as long as technically possible. – The metadata will be available even when the data no longer exists.

As stated already in Section 2.2, all of our data can become completely open immediately.

We will be archiving data in *cold storage* systems for long-term preservation already during the project. The data are expected to remain interpretable and reusable over time.

To validate the integrity of the results, the following will be done:

- We will run a subset of our jobs several times across the different compute infrastructures.
- We will use independently developed duplicate tools or workflows for critical steps to reduce or eliminate human errors.
- We will run part of the data set repeatedly to catch unexpected changes in results.

3. Allocation of resources

FAIR is a central part of our data management; it is considered at every decision in our data management plan. We use the FAIR data process ourselves to make our use of the data as efficient as possible.

- **Recyclable magnetic plasmonic bimetallic nanomaterials enveloped by smart polymers for SERS-detection and removal of selected pollutants from water**

Following resources will be dedicated to data management and ensuring that data will be FAIR:

- **Recyclable Magnetic Plasmonic Bimetallic Nanomaterials Enveloped by Smart Polymers for SERS-Detection and Removal of Selected Pollutants from Water** - výzkumný projekt.

The amount is 11 691 000 CZK (Czech Republic Koruna).

This resource is allocated for ensuring findability, ensuring accessibility, ensuring interoperability, ensuring reusability, and supporting management of data.

This cost will be covered by funding grant (grant number: 25-15590S)

We will be archiving data in *cold storage* systems for long-term preservation already during the project.

Mariusz Uchman is responsible for finding, gathering, and collecting data.

Karolína Šišková and Mariusz Uchman are responsible for maintaining the finished resource.

Karolína Šišková and Mariusz Uchman are responsible for implementing the DMP, and ensuring it is reviewed and revised.

To execute the DMP, no additional specialist expertise is required.

We do not require any hardware or software in addition to what is usually available in the institute.

4. Data security

Project members will not carry data with them (e.g. on laptops, USB sticks, or other external media). All data centers where project data is stored hold appropriate certifications. All project

web services are accessible via secure HTTP (https://...). Project members have been instructed about both generic and specific risks to the project.

The possible impact of information vandalism is small. The risk of information loss, and leak is acceptably low.

We are not using any personal information.

The archive will be stored in a remote location to protect the data against disasters. The archive needs to be protected against loss or theft. It is clear who has physical access to the archives.

We are running the project in a collaboration between different groups and institutes. A collaboration agreement that describes who can have access to what data in the project is set.

5. Ethical aspects

Data we produce

For the data we produce, the ethical aspects are as follows:

- **csv files as for spectra; images in tiff and/or jpeg; detailed protocols of syntheses**
 - It does not contain personal data.
 - It does not contain sensitive data.

Data we collect

We will not collect any data related to individuals, i.e. "personal data".

The data collection is not subject to ethical legislation.

6. Other issues

We use the [Data Stewardship Wizard](https://researchers.dsw.elixir-europe.org/wizard) with its *Common DSW Knowledge Model* (ID: dsw:root:2.6.13) knowledge model to make our DMP. More specifically, we use the <https://researchers.dsw.elixir-europe.org/wizard> DSW instance where the project has direct URL: <https://researchers.dsw.elixir-europe.org/wizard/projects/2f99bc63-d1b4-42b3-b504-aa7978754418>.