DATA MANAGEMENT PLAN

# 1. Data description and collection or re-use of existing data

## How will new data be collected or produced and/or how will existing data be re-used?

All data generated during the research project will be divided into three groups:

1) Raw measurement results of structure, thermal, mechanical, in vitro properties in a format specific to individual

instruments.

2) Microscopic images of glassy materials.

3) Glass, glass-ceramic and hydrogel samples prepared by laboratory techniques.

None of them will have independent commercial value.

The data obtained during the project will be stored on a portable hard drive, laptop, and in cloud.

## What data (for example the types, formats, and volumes) will be collected or produced?

Raw measurement data produced during project will be stored in the instrument's own formats that have generated

and exported the data for analysis (XRD .xrdm, .brml, .raw; SEM/EDS, Confocal microscopy .jpeg, .png, .tiff, .docx, pdf;

FTIR and Raman .asc; Thermal analysis .ngb-taa, In vitro dissolution .txt). We do not expect large volumes of data - they

will be single megabytes and several dozen, maybe several hundred photos. Results will be analyzed using OriginPRO

(.opj), Excel (.xlsx), and GIMP (.jpeg, .tiff). We expect that volume of generated files may be in the range of 500GB-1TB.

# 2. Documentation and data quality

## What metadata and documentation (for example methodology or data collection and way of organising data) will accompany data?

Data will be organized in folders accordingly to the used methodology and the family of samples. The information

about the samples preparation and measurements conditions will be listed in additional files and stored in a dedicated

catalog. The names of prepared materials will have special numbers correlated to their compositions and will be also

listed in files. Additionally, part of the raw data will be facilitated by an open research data repository, MOST Wiedzy

from Gdańsk University of Technology with metadata standards such as DataCite. The description of raw data

achievement will be stored in JSON-LD format.

## What data quality control measures will be used?

The data quality will be determined based on the parameters of the measuring equipment and the purity of the

chemical reagents. Moreover, the regular calibration of used devices with reference samples will be conducted to

maintain quality control. All of the data will be recorded by qualified personnel with appropriate standards and

scientific procedures. The measurements will be repeated several times for reliable data receiving.

# 3. Storage and backup during the research process

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

## How will data security and protection of sensitive data be taken care of during the research?

We do not anticipate the processing of sensitive or other data requiring special protection. However, the work

computer and measuring equipment are protected by a strong password known only for project members and

authorized staff members. Security features (e.g. passwords) will be changed regularly every six months to minimize

the risk of data loss or unauthorized access.

All the obtained data will be stored on a work computer and in cloud. In addition, two backups of measurement data

will be done: one directly at the measuring equipment, the other on the offline external drive/s. The data will be

additionally available to all project participants. The backup will be conducted every month.

# 4. Legal requirements, codes of conduct

## If personal data are processed, how will compliance with legislation on personal data and on data security be ensured?

OSF, OPUS-29 Strona 40 ID: 651313, 2025-06-09 11:29:38

## How will other legal issues, such as intelectual property rights and ownership, be managed? What legislation is applicable?

the institution where the project will be implemented – namely, Gdańsk University of Technology and Medical

University of Gdańsk. The obtained data and results will be published in Open Access model under one of the Creative

Commons licenses (CC0 where it will be possible).

# 5. Data sharing and long-term preservation

## How and when will data be shared? Are there possible restrictions to data sharing or embargo reasons?

Data will be shared no later than the publication of the articles based on these data. The way of data publication may

be also associated with the different publishers' requirements but can’t break the rules of open licensing and the date

of datasets publication. Due to project requirements and with the Gdańsk University of Technology authorities’

consent the data and results will be published in the Open Access model under one of the Creative Commons licenses

additional restrictions are required.

Part of the data will be published in the Gdańsk University of Technology internal system – MOST Wiedzy Open

Research Data Catalogue. Part of the data will be published in scientific journals which may also require raw data

publications or links to the MOST Wiedzy Open Research Data Catalogue.

## How will data for preservation be selected, and where will data be preserved long-term (for example a data repository or archive)?

The MOST Wiedzy Open Research Data Catalogue will be the main data repository. Data provided to that repository

will be chosen based on its scientific quality and exemplarity. Additionally, the data transferred to the repository will

fulfill FAIR requirements and will be categorized and labeled according to the standard file formats. Data published in

scientific articles will have priority for long-term keeping. Raw data in open formats (.csv/.dat/.txt/image formats) will

be accessible to the general public.

## What methods or software tools will be needed to access and use the data?

Software used for the processing of the dataset will be either closed license or open-source, depending on the

particular dataset. The data provided to the open repository will be in open format (i.e. .txt, .csv, .jpeg, .png, .tiff, .docx,

.pdf), so there will be no need of using specialized software by recipients. The data in raw formats will be provided on

direct request.

## How will the application of a unique and persistent identifier (such us a Digital Object Identifier (DOI)) to each data set be ensured?

The data available in MOST Wiedzy Open Research Data Catalogue platform will be assigned with the DOI number.

# 6. Data management responsibilities and resources

## Who (for example role, position, and institution) will be responsible for data management (i.e the data steward)?

Centrum Kompetencji Otwartej Nauki [Open Science Competence Center] (pg.edu.pl/openscience) established by

Principal Investigator will be responsible for the procedures assessment and overall data quality.

## What resources (for example financial and time) will be dedicated to data management and ensuring the data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

OSF, OPUS-29 Strona 41 ID: 651313, 2025-06-09 11:29:38