

PLAN ZARZĄDZANIA DANYMI [w języku angielskim]

1. Opis danych oraz pozyskiwanie lub ponowne wykorzystanie dostępnych danych

Sposób pozyskiwania i opracowywania nowych danych i/lub ponownego wykorzystania dostępnych danych

New data will be acquired by cyclic voltammetry (CV) and Dynamic Electrochemical Impedance Spectroscopy (DEIS) measurements conducted on polished platinum electrode after multi-step cleaning and stabilisation of its potential in an electrochemical system. Data determination from DEIS measurements will be carried out using an application prepared in LabView, then saved in text documents (.txt), and read in by code developed in Python.

Solutions will be prepared using water of grade I purity according to EN 3696:1999 and chemical reagents of the highest possible purity. CV measurements will verify the purity of the system prior to DEIS measurement. A measurement will be considered valid when a CV curve consistent with the literature for the solution is obtained. At least 3 repeated measurements will be collected for each solution.

Files will be stored in labeled folders separate for each solution, concentration and temperature as well as measurement repetition.

Pozyskiwane lub opracowywane dane (np. rodzaj, format, ilość)

For each measurement repetition, 7 text documents (.txt) with a total size of approx. 9 MB will be obtained, containing the values of current, potential, real and imaginary part of the electrode impedance and the so-called "frequency package". The measurement results will be plotted on spectrograms and spectra of impedance, capacitance and charge, as well as associated graphs in .JPG format. The quantities determined in the analysis of the raw results (real and imaginary part of capacitance and charge as a function of electrode potential, equivalent circuit parameters) will be saved as text documents (.txt) or as CSV files (.CSV). Text studies will be prepared in .docx or .pdf documents.

The estimated total size of all files will be 0.5-2GB, depending on the required measurement repetitions and the number of created graphs.

2. Dokumentacja i jakość danych

Metadane i dokumenty (np. metodologia lub pozyskiwanie danych oraz sposób porządkowania danych) towarzyszące danym

The files will be stored in folders with names describing the type and concentration of electrolyte, divided into internal folders describing the temperature of the solution, and further internal folders labelled with numbers representing the measurement repetition number and information regarding deoxygenation of the solution. An explanation of the data description and additional information on the measurement conditions (e.g. electrode surface area, measurement technique and parameters) will be included in the README file, which will be provided with the measurement data.

The raw measurement data and the data resulting from the conducted analyses can be read out using a computer with standard MS software and/or Adobe Reader software, and no dedicated software is required to read and reuse the data. However, interpretation of the results requires knowledge of impedance techniques and oxygen electrochemistry on platinum.

Stosowane środki kontroli jakości danych

Minimising data validity risks will be realised by providing measurement conditions of the highest possible purity through the use of high purity water and reagents and multi-step cleaning of the electrode surface.

Quality evaluation is implemented by performing a CV measurement prior to the DEIS measurement, which verifies purity of the system, and by monitoring the spectra shape during DEIS measurement. At least three measurement repetitions will be performed for each solution to eliminate measurement errors.

The problem of bias will be addressed by documenting the procedure for preparing the solutions and sample for measurement as well as documenting the CV and DEIS measurement parameters, to enable reproduction of the measurements by other researchers.

3. Przechowywanie i tworzenie kopii zapasowych podczas badań

Przechowywanie i tworzenie kopii zapasowych danych i metadanych podczas badań

Data will be stored according to the 3-2-1 rule. Copies of all data will be stored on the project manager's computer with a storage capacity of 237GB, on an external drive with a storage capacity of 2TB and in the university's OneDrive cloud with a storage capacity of 100GB, so that both members of the project will have access to the data, but only after logging in to the university system. Data on the computer and drive will be protected through the passwords. The data on the computer and external drive will be copied as soon as the measurements are taken, while the data to the university cloud will be copied every month. Project manager is responsible for creating backups.

Sposób zapewnienia bezpieczeństwa danych oraz ochrony danych wrażliwych podczas badań

Project members will have access to the measurement data during the project, and correspondence related to the project will be carried out using work email. The project subjects are not expected to obtain sensitive data. If such data is obtained, it will be encrypted and stored in locked metal cabinets. In accordance with the Gdańsk Tech data security policy, personal data in paper form will be securely stored in locked file cabinets. Personal data and sensitive data in electronic form will be stored on workplace computers in an encrypted format, password protected for computer and document access, while computers are protected with anti-virus software. Only authorised persons may process personal data.

4. Wymogi prawne, kodeks postępowania

Sposób zapewnienia zgodności z przepisami dotyczącymi danych osobowych i bezpieczeństwa danych w przypadku przetwarzania danych osobowych

The project subject matter does not involve the collection and processing of personal data. If such data will be collected in order to comply with Polish RODO regulations, participants will be informed about the existing privacy policy and about the administrator of their personal data. Participants' consent will be obtained for recording and sharing their personal data. If necessary, the data will be anonymised or pseudonymised to preserve confidentiality.

Sposób zarządzania innymi kwestiami prawnymi, np. prawami własnością intelektualnej lub własnością. Obowiązujące przepisy

Researchers will contribute through collaborative agreements, but in accordance with the Regulations concerning management of copyright, related rights, industrial design rights and principles of commercialization (Resolution of the Gdańsk Tech Senate No. 117/2021/XXV of May 19, 2021), Gdańsk Tech university will retain ownership of the intellectual property rights. The CC BY/CC BY-SA licenses will be used or as requested in the data sharing application, ensuring appropriate acknowledgement of authorship and attribution.

5. Udostępnianie i długotrwałe przechowywanie danych

Sposób i termin udostępnienia danych. Ewentualne ograniczenia w udostępnianiu danych lub przyczyny embarga

Raw data in .txt format will be published no later than the publication of the scientific article in the MOST Wiedzy Open Research Data Catalogue under a CC BY 4.0 license. The embargo duration will be in line with the requirements of the journal, but will be no longer than 36 months, and the embargo will be lifted as soon as the article is published. Data not stored in the repository will be retained for 10 years. Access to the data may be delayed to protect intellectual property, but once any restrictions are removed, the data will be made openly available.

Sposób wyboru danych przeznaczonych do przechowania oraz miejsce długotrwałego przechowywania danych (np. repozytorium lub archiwum danych)

Only data containing valid measurement results will be designated for storage in the Gdańsk Tech University repository - MOST Wiedzy Open Research Data Catalogue, which fulfils the principles of FAIR Data, making the data findable, accessible, interoperable and reusable for other researchers and will be accessible for a long time.

All research data, including unpublished data, will be stored for min. 10 years in the research data archive of the user in the OneDrive cloud installed as a disk in the computer by an employee of the Gdańsk Tech IT Centre. Both the release of data in the repository and the storage in the OneDrive cloud are free of charge.

Metody lub narzędzia programowe umożliwiające dostęp do danych i korzystanie z danych

Measurement data will be saved and stored as text documents (.txt), which does not require access to special software to read them. The data will be made available in the MOST Wiedzy Open Research Data Catalogue, and its structure will be explained in an additional README file. Data in the repository will be shared in formats accessible in the Open Source software. If the project produces data that requires specific software to read, this information, along with a description of the procedure for reading the data, will also be included in the README file. However, interpretation of the results requires specialised knowledge of the used measurement techniques and the investigated research area.

Sposób zapewniający stosowanie unikalnego i trwałego identyfikatora (np. cyfrowego identyfikatora obiektu (DOI)) dla każdego zestawu danych

To ensure accurate and efficient data localisation, a DOI (Digital Object Identifier) will be permanently assigned to each dataset.

6. Zadania związane z zarządzaniem danymi oraz zasoby

Osoba (np. funkcja, stanowisko i instytucja) odpowiedzialna za zarządzanie danymi (np. data steward)

The project manager will be responsible for the substantive value of the data published in the MOST Wiedzy Open Research Data Catalogue, the quality of the data and the timing of its release. The staff of the Gdańsk Tech Library Open Science Competence Center and Gdańsk Navigation IT Services Center will be involved in ensuring that the data is properly stored, documented, made available and that the intellectual property rights of the research data and the licences under which the data can be published are defined.

Środki (np. finansowe i czasowe) przeznaczone do zarządzania danymi i zapewnienia możliwości odnalezienia, dostępu, interoperacyjności i ponownego wykorzystania danych

Both data storage in the MOST Wiedzy Open Research Data Catalogue and data storage on OneDrive (up to 100GB) cloud is free. Appropriate staff hours, software and storage space will be provided to ensure that all FAIR principles are fulfilled. If additional costs are generated they will be covered from indirect costs of the project.