Tracing Cobalt Sources from the Medieval World to early Industrial Society

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.

Dataset name / ID	Description	New or reuse	Digital or Physical data	Data Type	File format	Data volume	Physical volume
Textural	Experiments will produce textural data obtained by optical microscopy (OM) and electron microscopy (SEM), incl. images of mineral identification, crystal textures and glass phase proportion	*New data*	Digital	Images	pdf jpeg	<1GB	
Chemical	Experiments will produce chemical data obtained by electron microscopy (SEM-EDX), electron probe micro-analyzer (EPMA), (LA-)ICP-MS and multi-collector ICP-MS. Softwares to be used will be Astec (SEM), JEOL (EPMA), Iolite (LA-ICP-MS). Chemical data are stored in tabular form.	*New data*	Digital	Numerical Textual	csv xlsx pdf	<1GB	
Experimental	Experimental glasses will be made from cobalt ores, mixed with silica and ash, to be analysed for textural and chemical data.	*New data*	Digital Physical	Images Textual	pdf jpeg	<1GB	
Archive	Documentation of recipes, production numbers and sales invoices kept at Blue Colour Works museum site (BCW)	Reuse	Digital Physical	Images Textual	pdf jpeg	<1GB	

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:

Tracing Cobalt Sources from the Medieval World to early Industrial Society (NorCo) researchers will use published data from peer-reviewed publications and books, from the Blue Colour Works archive and databases.
Examples of such databases are:
De Ceuster, S., Degryse, P. (2023) Dataset of Lead Isotope Ratios of Lead Ores, KU Leuven RDR, V1, DOI: 10.48804/D4DPLJ
De Ceuster, S., Degryse, P. (2024) Dataset of lead isotope ratios of copper ores, KU Leuven RDR, V1, DOI: 10.48804/ZS1Q4U
Academic literature will be retrieved by using academic search engines and databases such as Google Scholar, LIMO and Scopus. Grey literature will be retrieved by using Google search engine and visiting relevant organization websites.
BCW archives are managed by BCW staff (Lasse Bjornland-Hermansen)

Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, refer to specific datasets or data types when appropriate and provide the relevant ethical approval number.

- No

Will you process personal data? If so, please refer to specific datasets or data types when appropriate and provide the KU Leuven or UZ Leuven privacy register number (G or S number).

- 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 or 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

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 datasets are associated with written lab notes and lab books per experimental setup or analysis tool. These are physically stored in the laboratory. For experimental data the identification and compositions of raw materials for melting experiments, and the experimental conditions (temperature, container) are kept, next to the physical products of these experiments.
Complimentary to this, for textural data, images of each experiment as micrographs (OM) or backscattered electron images and X-ray chemistry plots will be made, as pdf, jpeg, tiff figures. For chemical data, raw data from chemical analysis comprise txt, csv, xlsx files with raw data, incl. a log of the experimental conditions per instrument. Further calculations are made (i.e. corrected for instrument drift, calibrated, quantified...) into datasets of calculated data in txt, csv, xlsx files.

Will a metadata standard be used to make it easier to find and reuse the data?
If so, please specify which metadata standard will be used.

If not, please specify which metadata will be created to make the data easier to find and reuse.

- Yes

Dublin Core

Data Storage & Back-up during the Research Project

Where will the data be stored?

- Shared network drive (J-drive)
- OneDrive (KU Leuven)
- Personal network drive (I-drive)

How will the data be backed up?

- Standard back-up provided by KU Leuven ICTS for my storage solution

Is there currently sufficient storage & backup capacity during the project?

If no or insufficient storage or backup capacities are available, explain how this will be taken care of.

- Yes

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

Data will only be stored on the internal KU Leuven servers, with the possibility of a single copy on a password protected encrypted personal computer by the main researcher.

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

The costs for the storage are already paid through the allocation of funds to SET-IT through the department Earth and Environmental Sciences.

Data Preservation after the end of the Research Project

Which data will be retained for 10 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
- Other (specify below)

All data will be also available through the Blue Colour Works archive

What are the expected costs for data preservation during the expected retention period? How will these costs be covered?

All data will be available through KU Leuven and Blue Colour Works. No cost is expected.

Data Sharing and Reuse

Will the data (or part of the data) be made available for reuse after/during the project?
Please explain per dataset or data type which data will be made available.

- Yes, as open data

all data will be available through KU Leuven and Blue Colour Works

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

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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 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)
- Other data repository (specify below)

Blue Colour Works archive

When will the data be made available?

- Upon publication of research results
- Other (specify below)

if not published before, at the end of the project

Which data usage licenses are you going to provide?

If none, please explain why.

- CC-BY 4.0 (data)

Do you intend to add a persistent identifier (PID) to your dataset(s), e.g. a DOI or accession number? If already available, please provide it here.

- Yes, a PID will be added upon deposit in a data repository

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

No expected cost

Responsibilities

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

Primary responsible will be the PI, prof. P. degryse

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

Primary responsible will be the PI, prof. P. degryse

Who will manage data preservation and sharing?

Primary responsible will be the PI, prof. P. degryse

Who will update and implement this DMP?

Primary responsible will be the PI, prof. P. degryse