



TopoLight: SOFT MATTER PLATFORM FOR OPTICAL DEVICES VIA ENGINEERING OF NON-LINEAR TOPOLOGICAL STATES OF LIGHT

Deliverables

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Introduction

The TopoLight project participates in the Open Research Data Pilot in Horizon 2020. The H2020's open access policy requires that information generated by participating projects is made publicly available. In line with this, the TopoLight consortium will comply with the FAIR (Findable, Accessible, Interoperable, Re-usable) data principles and decide what information will be made public considering potential conflicts regarding commercialization and Intellectual Property Rights (IPR) protection, privacy concerns, security as well as data management and preservation questions.

The Open Research Data Pilot applies primarily to the data needed to validate the results presented in scientific publications. A first draft of the Data Management Plan (DMP) is provided in this document (Deliverable D5.2), when the first data sets have been identified. The DMP defines strategies to preserve and store data over a defined period to ensure their availability and re-usability after the end of the project. The procedures that will be implemented for data collection, storage, access, sharing policies, protection, retention, and destruction will be according to the requirements of the national legislation of each partner and in line with the EU standards.

The steering committee will assure that the EU standards regarding ethics and Data Management are fulfilled. Each partner will proceed with the survey according to the provisions of the national legislation that are adjusted in line with the respective EU directives for data management and ethics

In the TopoLight project numerical simulation and experimental data as well as procedures for the fabrication of hybrid organic/liquid-crystal systems and their behavior in non-linear topological devices will be generated as part of the partner's work. DMP details what data the project will generate, whether and how it will be exploited or made accessible for verification and re-use, and how it will be organized and preserved:

- Type of Datasets: (e.g., light intensity vs. wavelength and angle)
- Dataset description (what is in the file)
- Standards and metadata (how they were obtained and stored)
- Data Sharing
- Archiving and preservation (including storage and backup)



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General considerations

This DMP is not to be intended as a fixed document; it is intended to be a living document in which information can be made available through updates as the implementation of the project progresses when significant changes occur during the lifespan of the project if applicable. At the end of the project, a final DMP report will be included in the Plan for the Exploitation and Dissemination of Results (PEDR).

Dissemination shall be governed by the procedure of Article 29 of the Grant Agreement. The main results of the project will be made publicly available through conferences in national and international conferences (workshops, symposia) as well as disclosed by means of scientific publications. This does not change the obligation to protect results (Article 27 of GA), the confidentiality obligations (Article 36 of GA), the security obligations (Article 37 of GA) or the obligations to protect personal data (Article 39 of GA).

Each partner of the TopoLight consortium will ensure open access to all peer-reviewed scientific publications related to its results obtained within TopoLight within 6 months of publication. This shall be performed using institutional repositories (e.g., HAL for CNRS) and/or publication in journals offering open access (free of charge or with payment). Metadata of each publication will also be made available on the TopoLight website.

Open access to some research data would not be applicable, according to Grant Agreement Article 29.3 (“As an exception, the beneficiaries do not have to ensure open access to specific parts of their research data (...), if the achievement of the action's main objective (as described in Annex 1) would be jeopardised by making those specific parts of the research data openly accessible.”)

Most of the data resulting from work performed within TopoLight will be kept internally and stored at the partner place/institutions. This internal data management and storage from each partner will not be described in detail in this document for each data set, but will follow the general rules outlined here.

The research data commonly accepted in the scientific community as necessary to validate research findings will be made available to any researcher interested in the topic. The data set will be shared after a publication will be secured by the Consortium. Any researcher interested in pursuing this must consent to give acknowledgement to this effort by explicitly mentioning TopoLight (H2020, No 964770).

To apply for an access to the research data generated by the TopoLight project the corresponding author mentioned in the publication or presentation should be contacted. The corresponding author will share this request among the steering committee of TopoLight Consortium and the decision to grant or not to grant the access will be discussed among the Partners and the response will be provided within several days (max. 2 weeks). Open access to some research data will not be applicable, according to Grant Agreement Article 29.3, and such a decision is the prerogative of the steering committee of TopoLight Consortium.



TopoLight's Datasets

1. Fabrication of hybrid organic/liquid-crystal microcavities

1.1. Dataset description

The data will consist of parameters describing hybrid organic/liquid-crystal microcavities fabricated by TopoLight consortium (IBM and WAT), including:

- Date of the fabrication
- Type of the substrate
- Information about Distributed Bragg Reflectors (DBR) including:
 - materials for DBR,
 - thickness of layers or the central wavelength,
 - number of DBRs
 - thickness of the whole structure
- type of the liquid crystal used to fill the cavity
- type of the emitter (if applicable)

1.2. Standards and metadata

Data stored in ASCII format and a header including all necessary information about the sample.

Data in the form of the picture (commonly used file types like tiff/tif, png, jpeg/jpg etc.) or drawing of the sample.

1.3. Data Sharing

In case of research data published in scientific journals the parameters of investigated samples are typically the part of the article or supplementary information. TopoLight Consortium aim to publish in Open Access journals, so such information would be available for the scientific community.

The research data commonly accepted in the scientific community as necessary to validate research findings will be made available to any researcher interested in the topic. The data set will be shared after a publication will be secured by the Consortium. Any researcher interested in pursuing this must consent to give acknowledgement to this effort by explicitly mentioning TopoLight (H2020, No 964770). To apply for an access to the research data generated by the TopoLight project the corresponding author mentioned in the publication or presentation should be contacted, as described in the [General considerations](#) on pg. 3.

1.4. Archiving and preservation

The data about the investigated samples will be available through Open Access publications stored as a part of the scientific articles or supplementary materials.

Most of the data will be kept internally and stored at the partner place/institutions. The procedures that will be implemented for data archiving, preservation and curation will be according to the requirements of the national legislation of each partner and in line with the EU standards.



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2. Optical characterization

The Optical characterization will be collected as an information of parameters of detected light (e.g., light intensity, wavelength, polarization)

2.1. Dataset description

These data contain results of measurements of transmission, absorption, reflectivity, luminescence of light. The data are collected using spectrometers equipped with CCD cameras. They contain of the light intensities detected by CCD camera pixels and measured wavelength and information about polarization of light.

2.2. Standards and metadata

Data stored in ASCII format and a header including all necessary information about the data and measurement protocol.

Data stored in other formats like: commonly used file types for image (tiff/tif, png, jpeg/jpg etc.), PDF file, Matlab (mat) or Python (py), proprietary formats like: Princeton Instruments (spe), Andor (sif).

2.3. Data Sharing

The data used for the scientific publication will be shared through a reputable and long lasting server and linked by the TopoLight website.

The research data commonly accepted in the scientific community as necessary to validate research findings will be made available to any researcher interested in the topic. The data set will be shared after a publication will be secured by the Consortium. Any researcher interested in pursuing this must consent to give acknowledgement to this effort by explicitly mentioning TopoLight (H2020, No 964770). To apply for an access to the research data generated by the TopoLight project the corresponding author mentioned in the publication or presentation should be contacted, as described in the [General considerations](#) on pg. 3.

2.4. Archiving and preservation

Most of the data will be kept internally and stored at the partner place/institutions. The procedures that will be implemented for data archiving, preservation and curation will be according to the requirements of the national legislation of each partner and in line with the EU standards.

The data used for the scientific publication will be shared through a reputable and long lasting server and linked by the TopoLight website. Example of possible website is the server of the Digital Repository of the University of Warsaw <https://repor.icm.edu.pl>. The data in the repository would be collected and marked by the title of the publication, list of co-authors, and figure or figures which are based on these data. All necessary information about the shared data content will be given in a separate ASCII txt file or PDF file attached to the repository collection.



3. Numerical simulations

Numerical simulations are results of computer calculations (all Partners).

3.1. Dataset description

The datasets depend on the type of numerical simulations.

3.2. Standards and metadata

Data stored in image (commonly used file types like tiff/tif, png, jpeg/jpg etc.), pdf, MS Word, PDF or ASCII format and a header including all necessary information about the data and measurement protocol.

3.3. Data Sharing

The data used for the scientific publication will be shared through a reputable and long lasting server and linked by the TopoLight website.

The research data commonly accepted in the scientific community as necessary to validate research findings will be made available to any researcher interested in the topic. The data set will be shared after a publication will be secured by the Consortium. Any researcher interested in pursuing this must consent to give acknowledgement to this effort by explicitly mentioning TopoLight (H2020, No 964770). To apply for an access to the research data generated by the TopoLight project the corresponding author mentioned in the publication or presentation should be contacted, as described in the [General considerations](#) on pg. 3.

3.4. Archiving and preservation

The data related to simulations work will be stored, as initial storage, on the computers and/or computational clusters (local, national or at the European level) where the calculations are performed. Data will be stored on associated drives as a secondary storage. Depending on the availability of a storage section on TopoLight website, data might be stored on TopoLight Partners' servers for a third level of storage and the corresponding publication will be stored on <https://hal.archives-ouvertes.fr/>.

The data used for the scientific publication will be shared through a reputable and long lasting server and linked by the TopoLight website. Example of possible website is the server of the Digital Repository of the University of Warsaw <https://repod.icm.edu.pl>. The data in the repository would be collected and marked by the title of the publication, list of co-authors, and figure or figures which are based on these data. All necessary information about the shared data content will be given in a separate ASCII txt file or PDF file attached to the repository collection.



4. Ethical and security aspects:

The TopoLight project will not generate or collect any ethically and /or personally sensitive data as all data will be related to investigations of hybrid organic/liquid-crystal microcavities.

The TopoLight beneficiaries are committed to respect the EU legal requirements on privacy and data protection (i.e., GDPR (EU) 2016/679) and to adhere to the ethics standards applicable to H2020 research. In accordance with the data minimization, data retention and purpose limitation principle, personal data will not be collected beyond the scope of the processing objectives and will not be stored for longer than necessary.



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