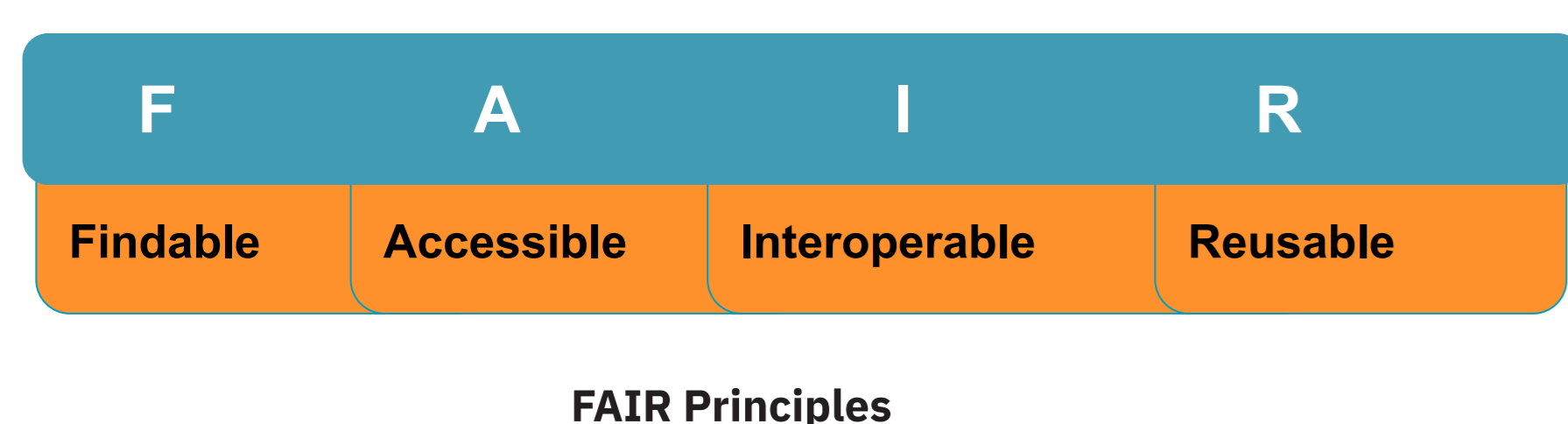


# Metadata, Data Standards and Publication Standards: NFDI4Chem

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## FAIR Principles in Chemistry - a Status Quo

In 2019, NFDI4Chem performed an international survey among chemistry researchers from many disciplines and career levels to get some insight into the current status of Research Data Management (RDM) in chemistry and FAIR principles awareness. More than 600 responses were obtained where the majority of the participants agreed on the importance of metadata, but only 42% of them described their collected data with metadata. Another survey with 427 answers from chemists revealed that 1 out of 4 professors knew the FAIR principles whereas only 1 out of 10 PhD students did so.



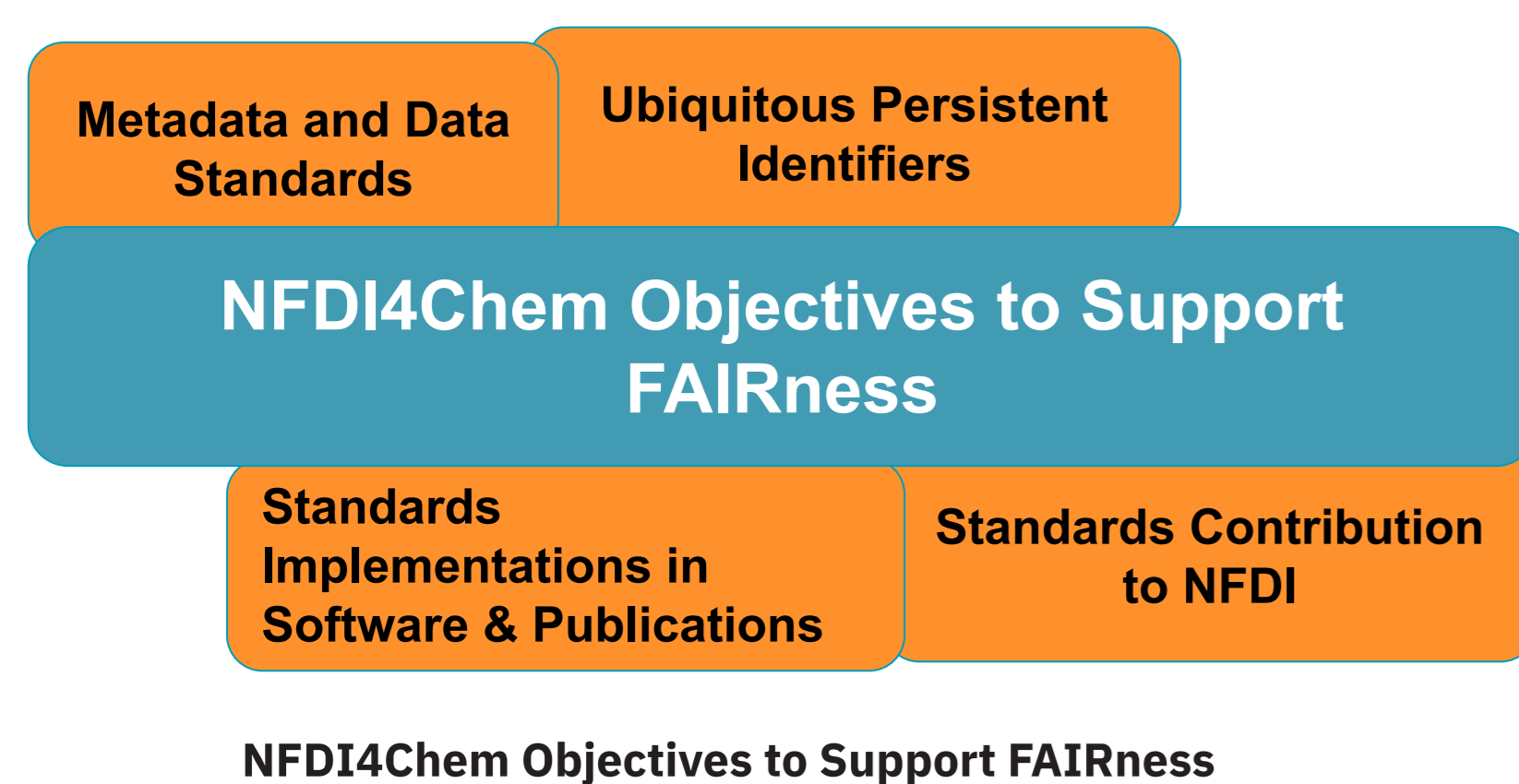
## How Standards Improve FAIRness

Digitalization is a step towards enhancing FAIRness, but this step needs to be supported with guidelines for data organization to ensure that chemical investigations are described with sufficient data and metadata that are in turn connected to Persistent Identifiers (PIDs) in order to make them findable, accessible, citable, and reusable. The interoperability is supported through standard vocabularies and links to other PIDs in the metadata record of a PID.



## NFDI4Chem Objectives to Support FAIRness

NFDI4Chem is aiming at creating and maintaining specifications and documentation of standards required for archival, exchange, and reuse of data and metadata for different disciplines of chemistry, along with implementations and data validation. We will support persistent identifiers and contribute information about the standards itself to repositories of standards, such as the fairsharing, a curated resource on data and metadata standards, to make the standards themselves FAIR.

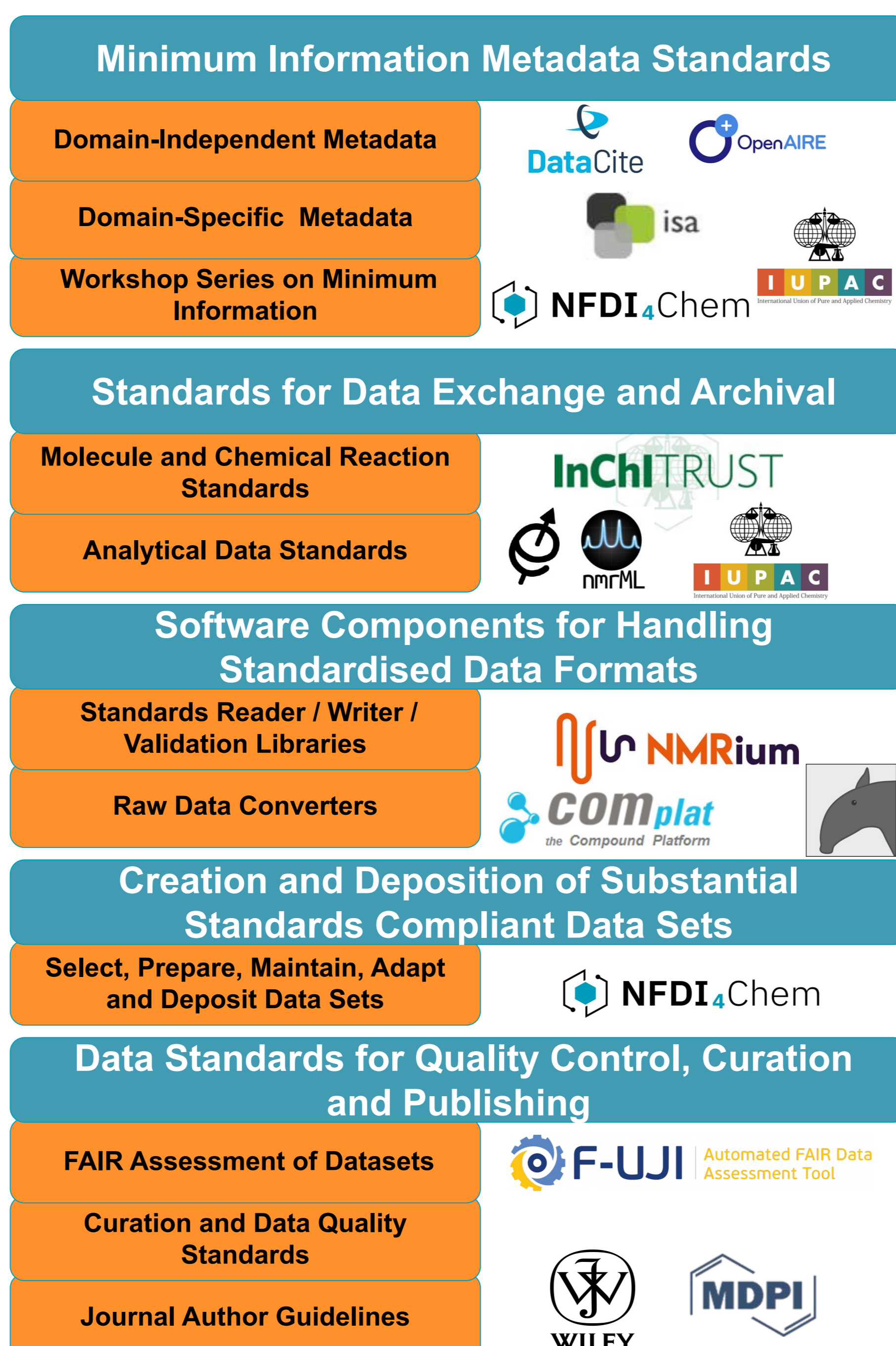


## Standards in Chemistry

In NFDI4Chem, we will work on developing standards to make chemical data more FAIR, machine-readable, and annotated with ontology terms. We will collaborate with other international parties to ensure the global acceptance of our proposed standards.



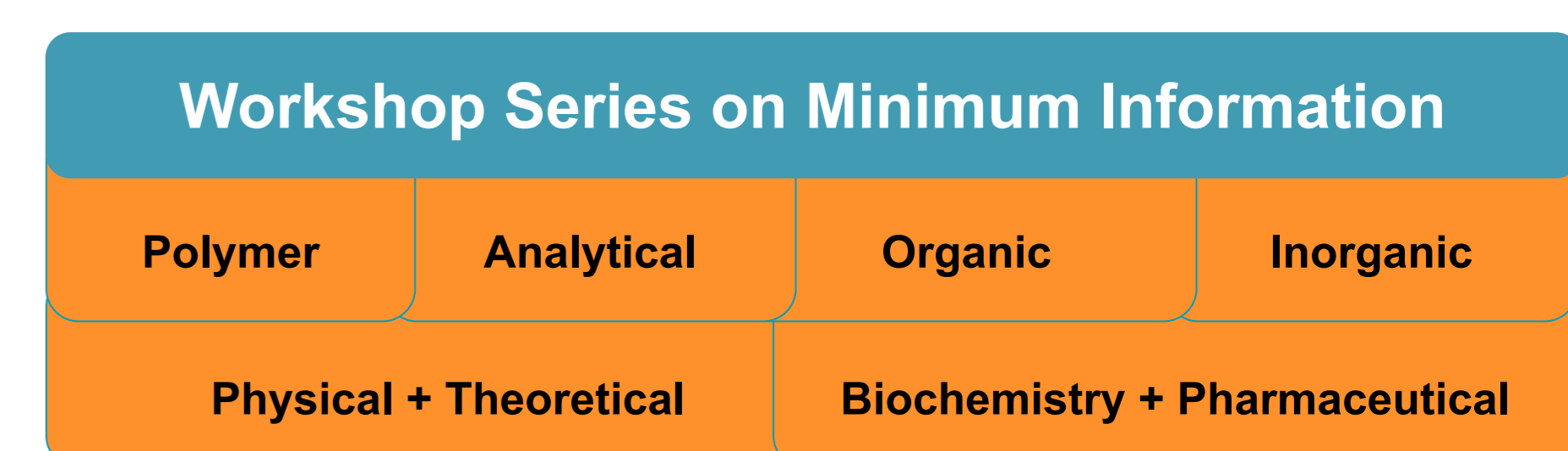
## NFDI4Chem Measures to Pursue Standardization Objectives



Ontologies are used as an integral aspect of the standards wherever possible, to describe research data in machine-readable form, and to provide methods and units without the ambiguity that comes with free-text. Missing terminological artifacts will be created and integrated.

## Workshop Series on Minimum Information

NFDI4Chem, in collaboration with other experts in the standards field, will develop Domain-specific MI standards in a series of international workshops corresponding to subdisciplines of chemistry. The accepted consensus for a specification of Minimum Information about a Chemical Investigation (MICH) will be reached and discussed with the stakeholders to ensure world-wide acceptance. Prior to the publication of the standards, there will be a Request for Comments (RFC) as part of a public reviewing.



Workshop Series on Minimum Information in Different Subdisciplines of Chemistry

## Future Events: Minimum Information Standards in Polymer Chemistry Workshop

This is the first workshop from the Workshop Series on Minimum Information where we would like to have experts in polymer chemistry to participate in the development and definition of polymer MICH. Please find more details from the links at the bottom.

## Data Pledge: Let's Lead-by-Example!

NFDI4Chem has a clear vision of how chemistry research data will be collected, processed, archived, shared, and published. Before our NFDI4Chem's infrastructure and tools are released, we would like to showcase your chemistry research data to demonstrate what is already possible with the infrastructure and tools available today. Please find more details from the links at the bottom.

## Chemotion ELN for Standardized Enzymology Data Reporting

We have adapted STRENDA guidelines recommended by Beilstein-Institute for reporting enzymology data in Chemotion ELN and we will be thrilled to have researchers testing our tools with their data. Please find the link for our Chemotion ELN at the bottom.



## Let's Work Together to Make Chemistry FAIR Join Us in:



Please don't hesitate to contact us for more details via our help desk:  
[helpdesk@nfdi4chem.de](mailto:helpdesk@nfdi4chem.de)



Scan the QR Code to visit our NFDI4Chem website



Scan the QR Code for more details on the Data Pledge



Scan the QR Code for more details on Polymer Workshop



Scan the QR Code to visit our Chemotion ELN web application