

1 Non-binding letter of intent (anticipated submission in 2021)

2 Formal details

Planned name of the consortium

Consortium for the Safety of Innovative Materials

Acronym of the planned consortium

InnoMatSafety

Applicant institution

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Spokesperson

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- • Prof. Dr. Brigitte Voit, Dr. Ron Dockhorn, IPF – Leibniz Institute of Polymer Research

3 Objectives, work programme and research environment

Research area of the proposed consortium

201 Grundlagen der Biologie und Medizin, 205 Medizin (Toxikologie), 321 Molekülchemie, 322 Chemische Festkörper- und Oberflächenforschung, 323 Physikalische Chemie, 324 Analytische

Concise summary of the planned consortium's main objectives and task areas

Our vision is to develop and establish a stable, secure, reliable and sustainable research data management infrastructure in the field of innovative materials safety. The initiative will contribute to standardisation and digitisation of processes starting from the planning of research projects, acquisition of data, up to their publication, collection, curation, and dissemination. The consortium focuses on the following objectives:

- • Developing (meta-)data standards that work across the involved disciplines and support regulatory needs
- • Developing and publishing machine-readable and fine-granular (standard) operating procedures for research, materials development and regulation
- • Creating a federation of interoperable domain-specific repositories/databases for storing, sharing, finding and re-using research data, including (meta)data from ELN
- • Engaging with the community in order to increase data literacy, foster the FAIR data principles, integrate RDM and data science into curricula, and disseminate the services provided by the consortium
- • Creating an ethical and legal framework that provides guidelines and policies regarding the use of personal data, animal testing, terms of use and intellectual property

The consortium will pursue these objectives in the following task areas:

- • **Metadata and Data Standards:** develop metadata standards that work across disciplines and support regulatory needs
- • **Methods Development:** develop SOPs for research, materials development, and regulation
- • **Networked Repositories:** create a family of interconnected domain-specific repositories/databases for storing, sharing, finding and re-using research data across diverse data sources by adapting existing systems or by creating new ones
- • **Smart Lab:** foster automated data collection, interdisciplinary data transformation as well as data processing as basic steps for the reliable and reproducible testing of innovative materials
- • **Community Involvement and Training:** foster the recognition of FAIR data as standard for the community, integrate RDM and data science among professional curricular competencies and disseminate the services provided by the consortium
- • **Ethical and Legal Framework:** create an ethical and legal framework that provides guidelines and policies regarding the use of personal data, animal testing, terms of use and intellectual property

- • **Cross-Cutting Topics:** engage in collaborations with other NFDI-initiatives to ascertain the interoperability of cross-cutting topics across consortia

Brief description of the proposed use of existing infrastructures, tools and services that are essential in order to fulfil the planned consortium’s objectives

Several InnoMatSafety members cooperate in the BMBF-funded project NanoS-QM, developing and evaluating quality criteria and description standards for research data in the field of nanosafety research. The description standards will be translated into metadata formats and integrated into Electronic Lab Notebooks (ELN, e.g. Chemotion) and into digital preservation solutions (e.g. RADAR).

InnoMatSafety will cooperate with relevant (international) partners and existing infrastructures. The Organization for Economic Co-operation and Development (OECD), the European Chemical Agency (ECHA) and the European Food Safety Authority (EFSA) are important partners in the field of standardisation and regulation. The EU NanoSafety Cluster provides a forum for discussion among industrial stakeholders and the general public, which is complemented on a national level by the DaNa project. Learned societies and professional organisations such as DECHEMA and the German Society of Toxicology provide links to the various scientific communities represented in the consortium. BfR and BAM will ensure the link to regulation and availability of materials. InnoMatSafety will harmonise interfaces and description standards with the providers of eNanoMapper, Open TG-GATEs, Blast, OpenRiscNet and NanoObservatory and integrate these databases into the envisioned data federation. Researchers from InnoMatSafety partner institutions are appointed members of the MAK as well as the SKLM Commission and will ensure close cooperation with these bodies. The consortium has close links with relevant Leibniz Research Alliances, such as the “NanoSafety Research Alliance”, “Health Technologies” and “Bioactive Compounds and Biotechnology”.

Interfaces to other proposed NFDI consortia: brief description of existing agreements for collaboration and/or plans for future collaboration

InnoMatSafety aligns to and complements other NFDI consortia, in particular:

- • DeBioData: interoperable (meta-)data, data curation, quality criteria
- • 4Chem: material characterisation, ELN, interfacing with laboratory equipment
- • 4Health, GHGA: interface to medical data
- • MatWerk, FairMat: material characterisation, interoperable metadata
- • 4BIMP: imaging solutions, programming interfaces and tooling/services
- • 4Cat: catalyst materials

- • 4Immuno: cytometry (meta-)data, immunological (meta-)data
- • MaRDI: simulation

4 Cross-cutting topics

Please identify cross-cutting topics that are relevant for your consortium and that need to be designed and developed by several or all NFDI consortia.

InnoMatSafety addresses various cross-cutting topics. The end-to-end digitalisation of data collections from material characterisation to regulatory activities requires interoperable data and processes along the innovation cycle, including tools that minimise the necessary documentation effort for researchers. These challenges have to be met by other consortia as well. Of particular interest to InnoMatSafety are:

- • Smart Labs, Electronic Lab Notebooks, Lab automation
- • Interoperable metadata, knowledge graph and vocabularies
- • Legal issues
- • Authentication and Authorisation Infrastructure
- • Services for long-term preservation of research data

Please indicate which of these cross-cutting topics your consortium could contribute to and how.

InnoMatSafety can contribute to cross-cutting topics such as interoperable metadata schemata as well as modular and machine-readable Standard Operating Procedures (SOP) and their integration into ELN.