

PRESS RELEASE

PRESS RELEASE

No. 12 | 2019

July 7, 2021 || Page 1 | 4

Materials Science and Engineering institutions collaborate on implementing a distributed research data infrastructure

Five years of funding for the consortium NFDI-MatWerk

(Dresden, 07/07/2021) In a collaborative effort to tackle the enormous challenge of building a common National Research Data Infrastructure NFDI, all across Germany entire research areas are working together in subject-specific consortia. As one of ten consortia in the second round, "NFDI-MatWerk" is going to receive five years of funding for Materials Science and Engineering. The consortium consists of renowned research organizations, including 10 applicants and 15 associated partners and is represented by the speaker Prof. Dr. Chris Eberl from the Fraunhofer Institute for Mechanics of Materials IWM. It focuses on the infrastructure development for a shared materials data space.

The Gemeinsame Wissenschaftskonferenz GWK decided on July 2, 2021 to fund the NFDI-MatWerk consortia. It followed the recommendation of the expert panel and the German Research Foundation DFG. The grant for NFDI-MatWerk runs from October 2021 through September 2026. A total of 18 consortia applied for funding in various scientific areas in this second round for the National Research Data Infrastructure NFDI in a competitive process, 10 of which were recommended for funding.

"Fast and uncomplicated access to research results is an essential condition for the success of an increasingly interdisciplinarily operating science community," says Prof. Reimund Neugebauer, President of the Fraunhofer-Gesellschaft. "Establishing a common national research data infrastructure is an ambitious, cross-disciplinary project that will open up data and research results and make them more accessible for the scientific community. This will also advance Germany's position as a center of science in an international comparison and enable new innovations. With the funding now approved by the GWK, the NFDI-MatWerk consortium, which is centrally supported by Fraunhofer IWM, will make an important contribution in the field of materials science and materials engineering to systematically open up the excellent local research data for the entire German science system and to rapidly drive forward further digitalization here."

Materials are the basis for our modern technology

The aim of materials science and materials engineering is to characterize the physical mechanisms in materials and to develop resource-saving high-performance materials

Head of Corporate Communications

Markus Forytta | Fraunhofer-Institut für Werkstoff- und Strahltechnik IWS | Phone +49 351 83391-3614 | Winterbergstraße 28 | 01277 Dresden | www.iws.fraunhofer.de | markus.forytta@iws.fraunhofer.de

Field of Expertise Manager

Prof. Dr. Martina Zimmermann | Fraunhofer-Institut für Werkstoff- und Strahltechnik IWS | Phone +49 351 83391-3537 | Winterbergstraße 28 | 01277 Dresden | www.iws.fraunhofer.de | martina.zimmermann@iws.fraunhofer.de

with the most ideal properties possible for the respective application. Manufacturing processes are investigated accordingly and designed so that materials as well as component systems have the necessary service life, can be used in a circular economy and consuming as little resources as possible. Materials' experts optimize from the atomistic scale to the macro or component level. Processing steps influence the internal material structure on the various scales and thus determine the mechanical and functional properties. Today, research groups still use their own tools and standards for data processing and storage for the data they generate through experiments and simulations. Therefore, sharing data and software tools is unfortunately a tedious task.

PRESS RELEASE

No. 12 | 2019

July 7, 2021 || Page 2 | 4

The Materials Science and Engineering community is developing a common research data infrastructure

"We are excited that NFDI-MatWerk can start now and that we will be able to help in this community effort: to systematically develop a materials data space and make it securely accessible in the long term," says Prof. Chris Eberl from Fraunhofer IWM. The envisioned digital data space infrastructure must be able to map the various highly complex interrelationships between different materials data and be as seamless to use as possible in order to enable synergy effects. Data from the scientific groups distributed across Germany and beyond should be accessible via a so-called knowledge-graph-based infrastructure. That will allow fast, complex search queries and data evaluations to find new correlations. Such a technical achievement will also provide an excellent basis for next-generation artificial intelligence in the field of materials engineering. As a research community, we see NFDI-MatWerk as a unique opportunity to bundle the numerous activities in the field of research data management, thereby increasing the scientific productivity of researchers.

The consortium covers the majority of the MatWerk community in Germany

The NFDI-MatWerk consortium, coordinated by the Fraunhofer Institute for Mechanics of Materials IWM, consists of experts from the fields of materials science and materials engineering as well as mechanics. The applicant institutions are:

- Deutsches Forschungszentrum für Künstliche Intelligenz
- FIZ Karlsruhe – Leibniz-Institut für Informationsinfrastruktur GmbH
- Forschungszentrum Jülich GmbH
- Fraunhofer-Gesellschaft für angewandte Forschung e.V.:
 - Fraunhofer-Institut für Werkstoffmechanik IWM
 - Fraunhofer-Institut für Werkstoff- und Strahltechnik IWS
- Friedrich-Alexander-Universität Erlangen-Nürnberg
- Karlsruher Institut für Technologie KIT
- Max-Planck-Institut für Eisenforschung GmbH
- RWTH Aachen

The **Fraunhofer Institute for Material and Beam Technology IWS Dresden** develops complex system solutions in materials and laser technology. We define ourselves as idea drivers developing customized solutions based on laser applications, functionalized surfaces as well as material and process innovations – from easy-to-integrate custom solutions to cost-efficient solutions for small and medium-sized enterprises to industry-ready one-stop solutions. Our research focuses on aerospace, energy and environmental technology, automotive, medical and mechanical engineering, toolmaking, electrical engineering and microelectronics, and photonics and optics sectors. In our five future and innovation fields of battery technology, hydrogen technology, surface functionalization, photonic production systems and additive manufacturing, we are already creating the basis today for the technological answers of tomorrow.

FRAUNHOFER-INSTITUT FÜR WERKSTOFF- UND STRAHLTECHNIK IWS

- Technische Universität Bergakademie Freiberg
- Universität des Saarlandes

The associated institutions are:

- Albert-Ludwigs-Universität Freiburg
- Bundesanstalt für Materialforschung und -prüfung (BAM)
- Christian-Albrechts-Universität zu Kiel
- Deutsche Gesellschaft für Materialkunde e.V. (DGM)
- Deutscher Verband für Materialforschung und -prüfung e.V. (DVM)
- Gesellschaft für Angewandte Mathematik und Mechanik e. V. (GAMM)
- Helmholtz-Zentrum hereon
- Leibniz-Institut für Werkstofforientierte Technologien - IWT
- Physikalisch-Technische Bundesanstalt Braunschweig und Berlin (PTB)
- Ruhr-Universität Bochum
- Technische Universität Clausthal-Zellerfeld
- Technische Universität Darmstadt
- Technische Universität Kaiserslautern
- Universität Paderborn
- Universität Stuttgart

PRESS RELEASE

No. 12 | 2019

July 7, 2021 || Page 3 | 4

The role of the Fraunhofer Institute for Material and Beam Technology IWS

Prof. Martina Zimmermann, head of the field of expertise Materials Characterization and Testing at Fraunhofer IWS, is responsible for the task area “Community Interaction” together with her colleague Prof. Frank Mücklich from Saarland University. In her current function as president of the German Society for Materials Science, as a review board member of the German Research Foundation and as deputy spokesperson of the materials engineering discipline, she provides the necessary network to involve all stakeholders in the NFDI-Matwerk process. In close cooperation with the professional societies, their work will focus not only on stimulating a lively exchange between the stakeholders and the consortium by establishing appropriate communication platforms, but also on the development of continuing education courses, workshops and conferences.

About the National Research Data Infrastructure

The National Research Data Infrastructure (NFDI) has the objective to systematically index, edit, interconnect and make available the valuable stock of data from science and research. So far, these data have mostly been available in a decentralized, project-related, or temporary form. The federation and the states fund the NFDI jointly. Digital data storage is an indispensable prerequisite for treating new research issues, generating findings, and making innovations (Nationale Forschungsdateninfrastruktur NFDI). In November 2018, the federal and state governments decided to establish a National Research Data Infrastructure NFDI and intend to fund up to 30 consortia in

The **Fraunhofer Institute for Material and Beam Technology IWS Dresden** develops complex system solutions in materials and laser technology. We define ourselves as idea drivers developing customized solutions based on laser applications, functionalized surfaces as well as material and process innovations – from easy-to-integrate custom solutions to cost-efficient solutions for small and medium-sized enterprises to industry-ready one-stop solutions. Our research focuses on aerospace, energy and environmental technology, automotive, medical and mechanical engineering, toolmaking, electrical engineering and microelectronics, and photonics and optics sectors. In our five future and innovation fields of battery technology, hydrogen technology, surface functionalization, photonic production systems and additive manufacturing, we are already creating the basis today for the technological answers of tomorrow.

FRAUNHOFER-INSTITUT FÜR WERKSTOFF- UND STRAHLTECHNIK IWS

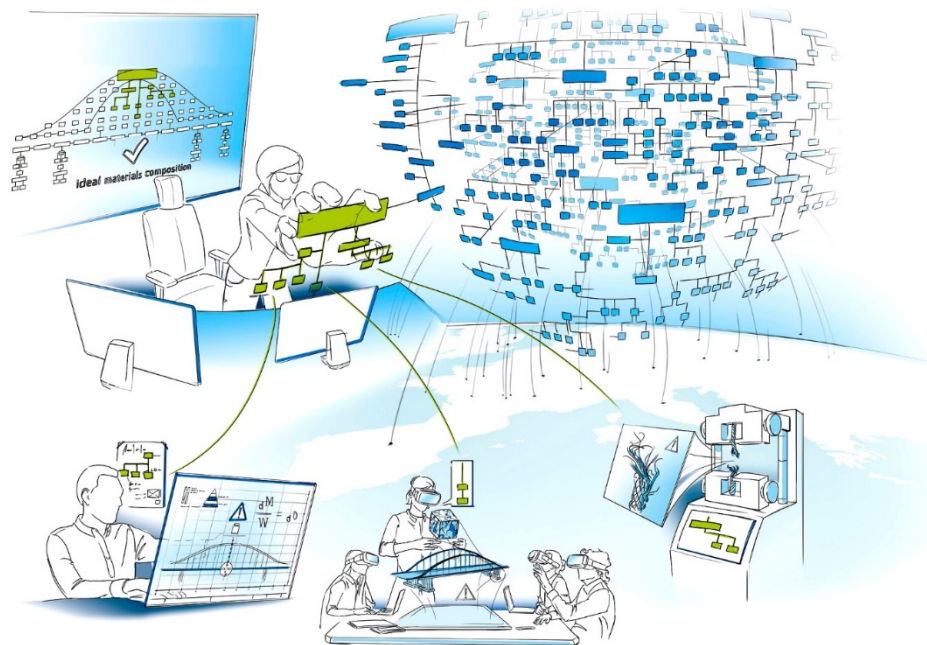
total. In the final stage, up to 85 million euros per year are to be made available for this purpose.

- Nationale Forschungsdateninfrastruktur NFDI e.V. (www.nfdi.de/en-gb)
- DFG, German Research Foundation – National Research Data Infrastructure (www.dfg.de/en/research_funding/programmes/nfdi)
- National Research Data Infrastructure for Materials Science & Engineering NFDI-MatWerk (www.nfdi-matwerk.de/)

PRESS RELEASE

No. 12 | 2019

July 7, 2021 || Page 4 | 4



NFDI-MatWerk aims to integrate decentralized expertise through a uniform data language and standardized interfaces. In this way, completely new kinds of knowledge can be generated in the future.

© Fraunhofer IWM

The **Fraunhofer Institute for Material and Beam Technology IWS Dresden** develops complex system solutions in materials and laser technology. We define ourselves as idea drivers developing customized solutions based on laser applications, functionalized surfaces as well as material and process innovations – from easy-to-integrate custom solutions to cost-efficient solutions for small and medium-sized enterprises to industry-ready one-stop solutions. Our research focuses on aerospace, energy and environmental technology, automotive, medical and mechanical engineering, toolmaking, electrical engineering and microelectronics, and photonics and optics sectors. In our five future and innovation fields of battery technology, hydrogen technology, surface functionalization, photonic production systems and additive manufacturing, we are already creating the basis today for the technological answers of tomorrow.