

# Fraunhofer Innovation and Technology Platform (FIT)

Circular Economy-Creating a Sustainable Environment

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## Fraunhofer Speaker Profiles for 6<sup>th</sup> Fraunhofer Innovation and Technology Platform 2023 (FIT)

# Mr. Torsten Nyncke

Head Foreign Fraunhofer Affiliates and Representations  
Fraunhofer- Gesellschaft



## 6<sup>th</sup> Fraunhofer Innovation and Technology Platform (FIT)

### Circular Economy-Creating a Sustainable Environment

**Mr. Torsten Nyncke** was born in Munich, 1976. He received a Master's degree in history from Ludwigs-Maximilian-University in Munich and an MBA from the Netherlands Institute of MBA Studies and Bradford University,

Mr. Nyncke joined Fraunhofer Headquarters in the International Department in 2003. He has since been responsible for a variety of international activities, chief among them the foundations of Fraunhofer Portugal and Fraunhofer Singapore as well as the Representative Office in Brazil.

In 2019 he was appointed Head of Foreign Fraunhofer Affiliates and Representations. In this position he is responsible for the network of eight Foreign Fraunhofer Affiliates in the USA, Singapore, Chile, UK, Sweden, Portugal, Italy and Austria. The Foreign Fraunhofer Affiliates conduct research in the Fraunhofer model in close cooperation with local research partners and German Fraunhofer institutes.

With International Representations, Mr. Nyncke is responsible for the Fraunhofer Representative Offices in Japan, South Korea, India and Brazil as well as the international Fraunhofer Senior Advisors. These offices and advisors support the international networking and marketing activities of Fraunhofer around the globe.

Mr. Nyncke serves as the President of the German Assembly of Fraunhofer Portugal.



# Dr. Markus Wolperdinger

Director,  
Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB



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**Dr. Markus Wolperdinger** has been appointed director of Fraunhofer IGB in 2018. He has more than 25 years of experience in various management positions - from innovative start-ups to large, international industrial corporations.

His scientific focus is on the development and provision of technology scale-up solutions for IGB customers - from laboratory to pre-industrial dimension - for a wide range of technology fields. His research interests are the bioeconomy and biological transformation. Today, Fraunhofer IGB successfully develops and optimizes processes, products and technologies for health, sustainable chemistry and the environment by combining biology, processes and engineering.

The IGB offers new approaches and systemic concepts for energy, waste and water management in industry and communities. IGB's innovative solutions for water extraction and water infrastructure concepts are adapted to geographical, demographic and regional conditions. IGB is working on technologies to selectively remove contaminants from waste streams and recover valuable materials. In addition, IGB is working on enabling smart cities to produce net-zero emissions and waste and thus, optimizing the resilience of infrastructure systems by integrating clean technologies with innovative urban development approaches.

With this thematic focus, the Institute is actively addressing the challenges of a climate-neutral bioeconomy and a sustainable circular economy: By developing integrated approaches for water, energy, agriculture and chemistry, IGB combines industrial value creation with environmental and climate protection.



# Dr. Christiane Bucher

Scientific Advisor to the Director

Fraunhofer Institute for Structural Durability and System Reliability LBF



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**Dr. Christiane Bucher** has been serving as a Scientific Advisor to the Director of Fraunhofer LBF Prof. Dr.-Ing. Tobias Melz since February 2022. Currently she works at an institute which was formerly headed by the current president of the Fraunhofer Gesellschaft. In 2019 she completed her PhD in Polymer Chemistry in from the Technical University in Darmstadt. Prior to that 2012 she was scientific collaborator at Technical University Darmstadt, Department of Chemistry, Research Group for Macromolecular Chemistry of Prof. Dr. Matthias Rehahn, where she researched the development of membrane polymers for Polymer Membrane Fuel Cells PMFCs on base of polyphosphazenes. She also managed the office of the regional federations for Hesse and Rhineland-Palatinate of Association of German Engineers VDI in Wiesbaden.

In addition to her academic achievement, she holds a degree in carpentry and is a state-certified restorer. Recently, she took up a teaching position at the Academy of Crafts Schloss Raesfeld.

Dr. Bucher is the Vice- Chairman of VDI in Frankfurt and Darmstadt , and during her free time she volunteers to provide technical training to young individuals in EXPERIMINTA Science Center in Frankfurt. On behalf of the VDI she also takes part in recognising the top mechanical engineering graduates at TU Darmstadt for their outstanding achievements.



# Prof. Dr. Manfred Renner

Director,  
Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT



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**Prof. Dr. Manfred Renner** is the Institute Director of Fraunhofer UMSICHT. He is a renowned personality in the field of Circular Economy, holding positions as Professor of Ruhr University Bochum, and Chair of Responsible Process Engineering and Head of Fraunhofer Cluster of Excellence Circular Plastics Economy CCPE. With exceptional expertise and a track record of success, he has shaped sustainable practices at corporate, regional, and European levels. Under his guidance, the institute has achieved remarkable growth with an annual turnover of 78 million.

Since September 2019, he has been a Representative of the FhG in the "acatech - Circular Economy Initiative Germany," and has been actively participating in the working group. His involvement demonstrates his commitment to industry collaboration and shaping policies and practices. Additionally, since March 2019, he has served as a Representative of the FhG in the "Circular Plastics Alliance" of the European Union in Brussels. Through his leadership, interdisciplinary collaborations, and commitment to industry collaboration, he continues to drive innovation, foster sustainable solutions, and inspire positive change on a global scale.



# Prof. Dr. Matthias Franke

Director,  
Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT  
Institute branch Sulzbach-Rosenberg



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**Prof. Dr. Matthias Franke**, a highly accomplished professional and currently serves as the Director of Fraunhofer Institute for Environmental, Safety and Energy Technology UMSICHT, Institute branch Sulzbach-Rosenberg. His expertise lies in the development of comprehensive waste management plans and concepts for countries, municipalities, and enterprises. He has played a key role in conducting waste and landfill surveys, designing efficient collection schemes, optimizing logistics, implementing advanced treatment technologies, establishing supportive legal frameworks, and creation of effective financial instruments. In addition, he played a key role in creating plans for landfill restoration.

Prof. Franke has made significant strides in resource recovery and recycling. His groundbreaking work includes the creation of thermochemical, thermochemical and hydrometallurgical techniques for the extraction and recycling of precious and important metals, fibers and minerals from waste and waste articles. out of date. In addition, it has pioneered closed-loop recycling methods, focusing on difficult-to-handle waste streams such as composites, mixed plastic waste and shredder scrap obtained from electronic and automotive scrap. His interest in chemical recycling techniques has resulted in efficient and sustainable solutions.

Prof. Franke's work outstanding work includes the receipt of 52 research grants, from industry and public sources amounting to a total value exceeding €35 million. These grants have supported numerous research projects and promoted advances in recycling technologies and waste management practices. His dedication to conducting impactful research and fostering collaborations ensures a more efficient and environmentally conscious future.



# Prof. Dr. Christopher Hebling

Division Director, Hydrogen Technologies  
Co-Director for the Division of Energy Technologies and Systems  
Fraunhofer Institute for Solar Energy Systems ISE



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**Prof. Dr. Christopher Hebling** is a highly accomplished professional with a diverse range of expertise in physics, academia, governance, and psychology. He has been serving as the Director of the Business Division for Hydrogen Technologies at Fraunhofer ISE since 2011, and since 2018, he has also taken on the role of Co-Director for the Division of Energy Technologies and Systems.

As an Honorary Professor at the University of Cape Town since May 2019, he acts as a mentor to aspiring scholars. He earned a doctorate in Physics from the University of Konstanz and received the prestigious "Summa Cum Laude" award.

He is actively involved in various associations and holds influential positions in prestigious organizations. He contributes to the Governance Board for the Centre for Hydrogen Innovations at National University of Singapore, where he plays an important role in driving advancements in hydrogen technologies. Additionally, he holds an important position on the expert committee of the German Government's Future Fund for the Transformation of the Automobile Industry. In this role, he influences policies aimed at facilitating a sustainable transition within the automotive industry. His exceptional contributions to society have earned him several other prestigious positions, recognizing his outstanding achievements.



# Mr. Franz-Josef Wöstmann

Head of Department Technology Forecast & Exploitation

Fraunhofer Institute for Manufacturing Technology and Applied Materials Research IFAM



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**Mr. Franz-Josef Wöstmann** is the Head of Department Technology Forecast & Exploitation at the Fraunhofer Institute for Manufacturing Technology and Advanced Materials (IFAM) in Bremen.

He was born in 1974 and studied Mechanical Engineering at the Paderborn University with the focus on Manufacturing Technology. He did his diploma thesis in the field of Manufacturing and Material Science in direct cooperation with a German automotive manufacturer.

He started his career as a mechanic at an industrial training institute. After his academic studies, he worked as a scientific assistant at the Laboratory for Material Engineering and Joining Technology at the University of Paderborn. The focus of his work was in the areas of Foundry Technology and Bonding Techniques. During this time he set up an International Center for Lost Foam Technology in association with several Foundry organizations.

He joined Fraunhofer IFAM in 2004, where he has been working on diverse areas like Lost Foam, Die-Casting and Electro Mobility. He is also involved in process development and manufacturing technologies for metals and composites.





# Dr. Carsten Cremers

Chief Scientist, Fuel Cell & Hydrogen Technology  
Department for Applied Electrochemistry  
Fraunhofer Institute for Chemical Technology ICT



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**Dr. Carsten Cremers** is an accomplished chemist and fuel cell technology expert. He holds a Ph.D in Chemistry from the Heinrich-Heine-University in Düsseldorf, Germany, in 1998, following his earlier studies in Chemistry at the same university, where he earned his Diploma in 1995. His journey in fuel cell technology began in 2000 when he joined Prof Stimming's group at the Technical University of Munich. In 2006, then he transitioned to the Fraunhofer ICT (Institute for Chemical Technology) where he made significant contributions to the fuel cell group within the Department for Applied Electrochemistry. From 2010 to 2022, he led the fuel cell group.

Since January 2023, Dr. Cremers is working as a Chief Scientist for Fuel Cell and Hydrogen Technology and Staff Expert for aviation and defense applications in the management group of the Division for Applied Electrochemistry. In this capacity, he spearheads research initiatives focused on material development for affordable hydrogen energy systems, electro synthesis, test method development for fuel cell or electrolyser components and stacks, as well as the development of integrated fuel cell and electrolyser systems and their resilient operation.

In addition to his prominent role in the industry, Dr. Cremers is an active member of various scientific and technical committee boards. Notably, he is associated with the VDI/VDE Committee on Hydrogen and Fuel Cells, the VDI technical guideline committee on Power to X, and the VDMA working group on fuel cell technology.

Dr. Cremers also shares his expertise through lectureships. He teaches Fuel Cell Technology at Ostfalia University for Applied Sciences and delivers lectures on Electrochemical Power Sources for Military Applications at Helmut-Schmidt-University / University of Bundeswehr Hamburg. His dedication to education further demonstrates his passion for fostering knowledge and innovation in the field.



# Dr. Moritz Kroll

Deputy Head of Group TestLab Batteries  
Fraunhofer Institute for Solar Energy Systems ISE



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**Dr. Moritz Kroll** studied chemistry with a strong focus on electrochemistry. At Fraunhofer ISE, he is a research scientist in the Department Electrical Energy Storage and holds the position of deputy head of group TestLab Batteries. His research focuses on safety assessments of batteries, involving both industrial contract research and public funded projects. He conducts performance tests and destructive testing on battery cells, modules, and systems for various applications, including automotive, stationary storage, maritime, aviation, power tools, and others. His investigations encompass different cell designs and alternative battery concepts. Through these projects, Dr. Kroll collaborates with numerous stakeholders in the European battery market, enabling him to leverage a broad professional network.



# Mr. Jochen Neubauer

Packaging Engineer,  
Fraunhofer Institute for Process Engineering and Packaging IVV



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**Mr. Jochen Neubauer** a packaging technology graduate from Berlin, Germany in 1995, holds a Diploma in Packaging Engineering. The majority of his professional career has been dedicated to Unilever in R&D Packaging. He joined Unilever in 1995 as a packaging engineer in Heilbronn/Germany, specializing in packaging development for potato flakes and dumplings.

In 1999, Mr. Neubauer assumed the position of Regional Packaging Manager in Asia, overseeing the entire food packaging business. This role, based in Manila, Philippines, provided him with invaluable learning experiences while traveling across the region. In 2002, he relocated to Germany and assumed leadership of the local German packaging group for Unilever Germany. Subsequently, he became the team leader of the Dry Savoury team within the newly established European packaging group. Eventually, and finally he was promoted to the position of Group Leader of the Global Packaging Team for Savoury.

From March 2010 onward, Mr. Neubauer has been an integral part of the Strategic Materials Team, serving as the Capability Leader for Flexibles. In this role, his primary focus has been on developing innovative flexible packaging materials and evaluating emerging technologies, with a strong commitment to sustainability across all categories and regions. In 2011, he reached out to Fraunhofer IVV regarding their solvent-based recycling technology, prompted by the growing challenge of managing flexible packaging waste in the Asia region. Consequently, a pilot plant for this ground-breaking technology was established in Indonesia.

Since 2020, Mr. Neubauer's has been working with Fraunhofer IVV on solvent-based recycling, especially using recycled resin in new flexible packaging.



# Mr. Marc Beckett

Senior Scientist at Innovation Field “Water Technologies and Resource Recovery”

Fraunhofer Institute for Interfacial Engineering and Biotechnology (IGB)



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**Mr. Marc Beckett** works as a researcher at Fraunhofer IGB since 2018. His research areas include wastewater treatment and reuse, resource recovery for soilless agriculture as well as digitization in water management. He was in charge of the research projects GreenUpSahara and NexusHub, where organic waste was treated as nutrient medium for hydroponic cultivation in arid regions. Mr. Beckett further led the Smart Water Monitoring Project in Solapur, Maharashtra, as well as the currently running AQUA-Hub project on Water Innovation Hubs and Smart Water Monitoring in Solapur and Coimbatore (Tamil Nadu).

After earning a degree in Biology at the University of Bonn, he furthered his academic pursuits by completing Masters in Environmental Science with an additional year of Environmental Engineering at the University of New South Wales, Australia. In 2017 he graduated with the degree Master of Science. His final thesis focused on assessing the potential of vacuum sewers as an innovative drainage concept for fast growing cities.

Moreover, he has been involved in projects concerning technology transfer in the area of wastewater treatment technologies in India and South Africa and in research and development projects for companies in Germany. He has been involved in studies and projects regarding water management for different municipalities and industries (automotive, food and beverage).

Mr. Beckett is member of the German Water Partnership (GWP) Regional Forum South- & Southeast Asia (Formerly Regional Forum India) and the working group “Decentralized wastewater management solutions for developing and transient countries” of the German Water Association (DWA).



# Dr. Mirko Bach

Scientific Assistant, Department Hydroforming and Tool concepts  
Fraunhofer Institute for Machine Tools and Forming Technology IWU

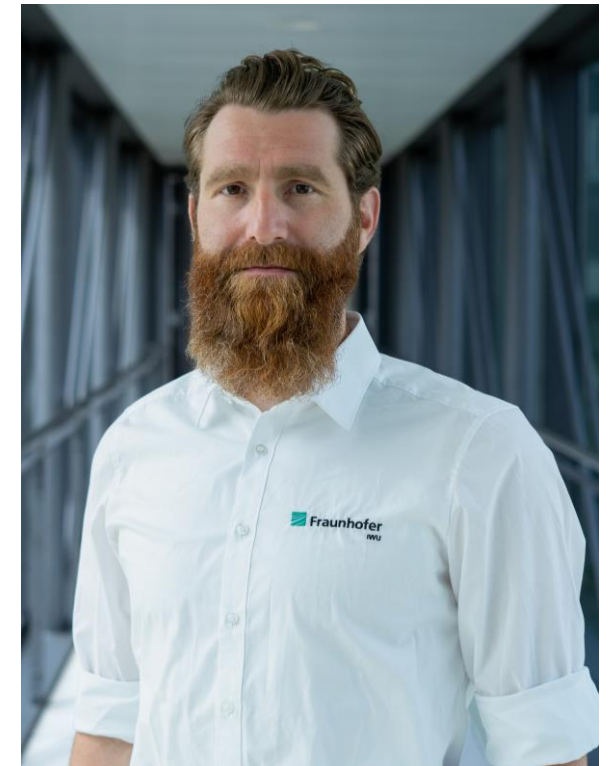


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**Dr. Mirko Bach** studied mechanical engineering with a specialization in machine tools and forming technology at Chemnitz University of Technology, where he worked as a scientist in the field of sheet metal forming technology for two years after graduating. From 2013 to 2021, he worked as a research assistant in the department of media based forming and high-speed technologies at the Fraunhofer Institute for Machine Tools and Forming Technology IWU. Since 2021, his focus in the department of bulk metal forming has been on special processes and the forming production of components for electric motors.



# Ms. Mirja Mannigel

Research Associate, Hydrogen Technologies Department  
Fraunhofer Institute for Manufacturing Engineering and Automation IPA



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**Ms. Mirja Mannigel** works as a research associate in the Hydrogen Technologies department at the Fraunhofer Institute for Manufacturing Engineering and Automation. There, she is primarily engaged in actively developing technologies for producing and storing hydrogen. Before this, Ms. Mannigel worked as a student trainee in the chemical industry at the energy strategy and policy department. In her master's thesis, Ms. Mannigel conceptualized a power-to-gas facility based on alkaline electrolysis. The goal of her thesis was the technical and economic investigation of a plant concept, which would effectively reduce the carbon dioxide emissions of a power plant in an industrial park in northern Germany.



# Mr. Manuel Wehner

Research Associate,  
Center for Logistics and Mobility - Aviation Logistics Department  
Fraunhofer Institute for Material Flow and Logistics (IML)



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**Mr. Manuel Wehner** is a Research Associate at the Fraunhofer Institute for Material Flow and Logistics (IML). He works in the IML's aviation logistics unit and, thereby, specializes in digitization and automation in the aviation and air cargo industry. In a current focus project, he analyses and facilitates the demonstration of different CO<sub>2</sub>-neutral autonomous air cargo vehicles, which will be tested at different German airports in 2024.

In 2020, he co-founded the Institute for Aviation & Tourism (IAT) at the Frankfurt University of Applied Sciences and became IAT's first Managing Director. At Fraport AG, operator of Frankfurt Airport and several other airports worldwide, Mr. Wehner was employed as a Project Manager, responsible for the testing of electrified automated people movers in the airport environment and other innovation projects.

Manuel Wehner studied Management & Technology (M.Sc.) in Munich/Germany and Querétaro/Mexico, as well as Aviation Management (B.A.) in Frankfurt/Germany and Riyadh/Saudi Arabia. His Master's degree was awarded by the Technical University of Munich, his Bachelor's degree by the Frankfurt University of Applied Sciences.



# Mr. Pranav Majgaonkar

Research Associate

Fraunhofer Institute for Chemical Technology ICT



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**Mr. Pranav Majgaonkar** pursued his Bachelor of Engineering in Chemical Engineering from Mumbai University, India between 2013 – 2017 and his Master of Science in Chemical Engineering from Ulm University, Germany between 2017 – 2019. In November 2019, he graduated from Ulm University, Germany after successfully defending his master thesis titled “Process Development for Chemical Recycling of Bio-based Polymers”. He is currently employed as a research assistant at Fraunhofer Institute for Chemical Technology and is actively involved in the research cluster Fraunhofer CCPE which is focussed on developing advanced chemical recycling strategies for petro-chemical and bio-based plastics. In his research, Mr. Majgaonkar aims to develop chemical recycling strategies for common poly-condensed fractions present in post-consumer and post-industrial waste streams. His work revolves around the use of eco-friendly organic catalysts to depolymerise these macromolecules and focusses on subsequent process development. In addition, it also emphasises on the recovery of these catalysts using organic solvent nano-filtration and the purification of the product with the help of an appropriate, energy-efficient downstreaming strategy. In a nutshell, his research aims at utilising the fundamentals of process synthesis and intensification for developing holistic yet industrially feasible chemical recycling strategies for different polycondensation polymers while strictly abiding by the principles of green chemistry and sustainable chemical engineering.





# Mr. Varun Kumar Minupala

Research Engineer

Fraunhofer Institute for Microstructure of Materials and Systems IMWS



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**Mr. Varun Kumar Minupala** is a Research Engineer at Fraunhofer Institute for Microstructure of Materials and Systems IMWS, engaged with the development of lightweight composite components by finding key solutions for component designing as well as manufacturing technologies like thermoforming, injection moulding and additive manufacturing through means of numerical approaches. Thermoplastics and fibre-reinforced thermoplastics are proven materials for their technical material properties, manufacturability, and sustainability. As a material engineer, he cuts off the time for a component to reach the market with promising research evidence, enabling first-time right-part production.

Through his professional career and education, Ph.D. in Mechanics of Materials, Mr. Minupala have gained solid knowledge of material behaviour, finite element modelling and design development involved in the lightweight sector. As a scholar and senior engineer, he would like to promote composite components and advanced material systems by bringing awareness of the latest innovations and manufacturing technologies.



# Mr. Tobias Fausch

Chief Information Officer  
BayWa AG



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**Mr. Tobias Fausch** since January 2019 CIO of BayWa. In his role, Fausch promotes digital solutions in agriculture to improve productivity and sustainability with a digital twin using Earth observation technology.

During the 18 years he was at BSH on various roles, he was in charge of setting up and maintaining four generations of corporate reporting and planning tools in changing IT and controlling functions, as well as responsible for the reorganisation and transformation of RIS Solution into BayWa IT GmbH an integrating IT into BayWa AG - a transformation already completed but which still presents challenges due to its continuously evolving nature.

BayWa is a globally active group with the core segments of agriculture, energy and building materials, as well as the development segment innovation & digitalisation. As a global player, BayWa develops leading projects and solutions for the basic human needs of food, energy and building.

