

Fröhliche Weihnachten

MERRY CHRISTMAS
JOYEUX NOËL



News from Fraunhofer IFAM Dresden



Fraunhofer
IFAM

Branch Lab Dresden

Highlights 2019

On 1 April 2019, **Dr. Thomas Weißgärber** has taken over provisionally the **management of Fraunhofer IFAM Dresden** from his predecessor Prof. Dr. Bernd Kieback. ➔

On 27 March 2019, **Prof. Dr. Bernd Kieback** has received the **Fraunhofer Medal** in recognition of his achievements for the Fraunhofer-Gesellschaft and beyond at the Honorary Colloquium on his farewell to well-deserved retirement.

The **Innovation Center Additive Manufacturing ICAM®** at Fraunhofer IFAM Dresden was **inaugurated** on 7 March 2019.

Here, the institute combines its various additive manufacturing technologies under one roof, including Selective Electron Beam Melting, three-dimensional screen printing, fused filament fabrication and three-dimensional stencil printing. ➔

On 5 November 2019, Dr. Thomas Weißgärber signed a **Memorandum of Understanding with the Korean Hanyang University** with the aim of promoting relations with the application-oriented research division ERICA (Education-Research-Industry Cluster at Ansan). ➔

Events 2020

Industry Workshop Thermal energy storage devices for efficient waste heat utilisation (in German)
Dresden, 3-3-2020
➔ Register here ➔

Energy Day IHK Dresden
Dresden, 7-4-2020

Additive Manufacturing Forum 2020
Berlin, 11 - 12-3-2020

Energy Storage
Düsseldorf, 10 - 12-3-2020

Fraunhofer Direct Digital Manufacturing Conference DDMC 2020
Berlin, 18 - 19-3-2020

Hannover Messe 2020
Hannover, 20 - 24-4-2020

DGM Training Course Introduction to metallic high temperature materials (in German)
Dresden, 12 - 14-5-2020
➔ Register here ➔

PM Life Additive Manufacturing
Dresden, 24 - 28-8-2020

Industry Workshop Advanced Alkaline Electrolysis
Dresden, 1-10-2020

EuroPM 2020
Lisboa, 4 - 8-10-2020

formnext 2020
Frankfurt, 10 - 13-11-2020

Ladies and gentlemen, dear partners, customers and companions,

The year 2019 is drawing to a close. We would like to take this opportunity to thank you for the good and trusting cooperation as well as your interest in our activities! At the same time, we would like to present a few current topics from the institute and invite you to meet us at one of the events in 2020, for example, to discuss these or other topics.

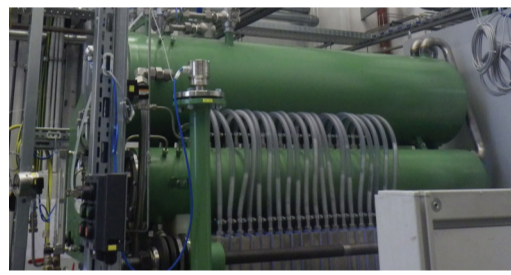
But first of all we wish you a Merry Christmas, a good start into the new year and for 2020 much success, health and personal well-being!

Kind regards
Dr. Thomas Weißgärber

Test stand for alkaline electrolysis put into operation

As part of the Green-H2 project, an industrial alkaline atmospheric test electrolyzer with 20 cells and an H₂ production rate of up to 1.5 kg per h was put into operation at Fraunhofer IFAM Dresden in 2019.

The plant will be used to qualify new electrode materials and electrode geometries and to test new cell designs.



Versatile and inexpensive: Alternative powders for the additive production of steels

This year, an alternative iron powder was successfully processed and tested at Fraunhofer IFAM Dresden, which answers one of the cost questions in additive manufacturing and opens up new possibilities.

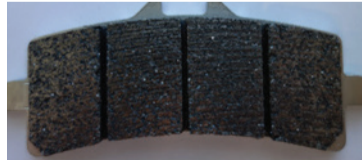
The production method used allows prices to be obtained for iron powder, which are only around 10 % of current costs.

There are also inexpensive alternatives for other materials. At the same time, material flexibility increases and a wider range of materials becomes economically feasible.

Copper-free sintered brake linings developed for motorcycles

With this development, the institute is taking account of new legislation on environmental compatibility in the US states of Washington and California, according to which the copper content in brake linings for road vehicles must be reduced to 0.5 % by 2025.

The copper-free sintered linings were developed together with the world's leading Danish manufacturer SBS Friction A/S and the Danish Technological Institute, with whom the institute has already successfully developed and tested new iron-based lining formulations.



Measuring apparatus for thermal conductivity at high temperatures

A compact test setup was developed at the institute with which the thermal conductivity of porous or anisotropic materials as well as composite materials and material composites can be reliably measured at higher temperatures.

In particular, the flexibility of the temperature range combined with the wide range of materials that can be investigated is to be emphasized. Thermal conductivity measurements in any temperature range between 100 °C and 450 °C are possible. Samples with a base area of 50 x 50 mm² and a height of up to 20 mm can be measured under vacuum or in a variable gas atmosphere.

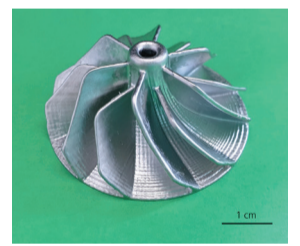
Project for reversible alkaline membrane electrolysis started

In August 2019, the BMBF project „REVAL“ was launched, in which the institute, together with Fraunhofer IMWS and the companies Fumatech and H-TEC Systems, intends to develop a short stack with a power consumption of approx. 10 kW.

The envisaged reversible operation has not yet been realised; two processes - fuel cell operation and electrolysis mode - must be represented on both sides, i.e. the anode and the cathode. The production of the membrane electrode assemblies and the process control are therefore particularly demanding.

Hybrid additive manufacturing process with Gelcasting

With Gelcasting, Fraunhofer IFAM Dresden has opened up a new technology for the production of components with metallic materials. Additive manufacturing processes are used to manufacture the casting moulds. The actual shaping takes place by pouring out these moulds with a suspension containing metal powder at room temperature. The process is particularly cost-effective and is characterized by its freedom in the choice of materials. Different material combinations are also possible.



Metal foam based catalysts for heterogeneous catalysis

Heterogeneous catalysis is at the heart of many chemical and petrochemical processes.

Together with our cooperation partner, Alantum Europe GmbH, we were able to develop and implement a process that is based on metallic alloy foams as the base material for catalysis; thus, it offers customers significantly improved efficiency for both smaller and larger reactors, notably increasing productivity and simultaneously reducing the CO₂ footprint.

All in all, this significantly reduces operating costs and ensures reliable production to uniform standards.

Compact cooling with waste heat

As part of the BMWi-funded AdoSan project, in which a highly efficient adsorption heat pump is being developed for providing hot water and heating energy in residential buildings, the costs of the manufacturing processes have now been significantly optimised. The productivity of fiber production by melt extraction has been increased tenfold to 10 kg/h. Also the dimensions of the sintered fibreboards were significantly increased.



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