# Workshop



Europäische Forschungsgesellschaft Dünne Schichten e. V. European Society of Thin Films

HIGH TECH CAMPUS

EINDHOVEN

innovation

# Thin Film Technologies | Future Applications of 2.5 D Materials

April 09 – 10, 2024 | Eindhoven, The Netherlands

Holst Centre

# Introduction

For the first time, energy applications such as (flexible) PV applications benefit from a commercial realisation in a Roll-2-Roll process. Further development of this application towards the realisation of 2.5D structures makes it attractive for energy storage applications, electrochemical storage (batteries) as well as for hydrogen as a storage modality. The ability to use newly developed materials as well as the targeted manipulation of these materials into relevant 3D structures is essential for the success of these applications which are under development.

The speakers will provide an overview of recent thin-film 2.5D applications with reference to material development, process development and integration to the application area in the Eindhoven - Germany - Western Europe region.

This Workshop "Thin Film Technologies | Future Applications of 2.5 D Materials" offers you an optimal platform for professional exchange on these and other trends. Here, experts can exchange detailed information, share their experiences and present innovations.

This European workshop is jointly organized by TNO, Holst Centre and European Society of Thin Films e.V..



### Tuesday, April 09, 2024

12:00 - 13:00 | Participant Registration

13:00 | **Opening** Welcoming words from Auke Kronemeijer, TNO & Udo Klotzbach, EFDS e.V.

#### Session 1 | Advanced 2.5D Energy Storage

13:10 | **3D electrodes for electrochemical energy storage and conversion** Michail Tsampas | DIFFER, The Netherlands

13:35 | Interface engineering of battery materials Diana Chaykina | TNO / Holst Center, The Netherlands

14:00 | **Development of Interface Engineered Next-Gen Batteries** Laura de Kort | LionVolt, The Netherlands

#### 14:25 | COFFEE BREAK

#### Session 2 | Materials & Analytics

15:20 | Thin film manufacturing to reduce usage of scarce materials and enhance durability in Proton Exchange Membrane Water Electrolysis Oscar Diaz-Morales | TNO / Holst Center, The Netherlands

15:45 | The role of interface properties on performance, stability and kinetics of anodes and cathodes for Li-ion batteries Marilena Mancini | Center for Solar Energy and Hydrogen Research (ZSW), Germany

16:10 | Leveraging e-Graphene coatings and additives to supercharge energy storage and textile applications Martin R. Lohe | Sixonia Tech GmbH, Germany

16:35 | Maximising information when sputter depth profiling thin films – collecting positive, negative and neutral particles simultaneously.

Graham Cooke | Hiden Analytical Ltd., United Kingdom

17:00 | Wafer-scale 2D Materials for Optoelectronics Gerd Bacher | University Duisburg-Essen, Germany

17:25 | End of the 1st workshop day

**GET-TOGETHER** 

19:00 | JOINT DINNER



### Wednesday, April 10, 2024

#### Session 3 | Processes & Simulation

09:00 | **Mastering Precision: Heidelberg Instruments' Trio of Technologies serving 2.5D Micro and Nanofabrication** Dominique Collé | Heidelberg Instruments Mikrotechnik GmbH, Germany

09:25 | **Thin film solar laser processing** Johan Bosman | TNO, Energy Materials Transition, The Netherlands

### 09:50 | Modeling the electrical conductivity of graphene-based thin films

Florian Fuchs | Fraunhofer Institute for Electronic Nano Systems ENAS, Germany

#### 10:15 | COFFEE BREAK & GUIDED TOUR THROUGH THE TNO PREMISES

#### The group is divided into two groups

#### 11:45 | LUNCH BREAK

#### Session 4 | Applications

12:45 | Capturing  $CO_2$  from air with thin film technology Hans de Neve | Carbyon, The Netherlands

#### 13:10 | **Spatial ALD of electrocatalyst layers for PEM electrolysis** Paul Poodt | SparkNano, The Netherlands

## 13:35 | 2.5D and 3D Integration Technologies for Advanced Electronics Packaging

Kai Zoschke | Fraunhofer Institute for Reliability and Microintegration IZM, Germany

14:00 | Concluding greeting

#### 14:10 | END OF THE WORKSHOP

\* Program – Current status 21/02/2024 | Changes possible





# Teilnehmergebühren

Early bird ticket (Standard) until February 09, 2024	.730 EUR
Participation ticket (Standard)	830 EUR
Participation ticket (Student) Please send us a copy of your valid student ID to <u>info@efds.org</u> .	420 EUR
Participation fees are tax-free according to §4 (22a) UStG.	

#### **Online Registration**

Please register on the website https://efds.org/en/event/wsmicroelectronics-2-5-d-materials/



#### **Event Location**

High Tech Campus 1-E Eindhoven The Strip Eindhoven, 5656 AE Niederlande

#### **Event Management**

#### Europäische Forschungsgesellschaft Dünne Schichten e.V.

#### European Society of Thin Films

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#### Workshop-Commitee:

- Henri Fledderus | Solliance
- > Auke Kronemeijer | TNO / Holst Centre
- > Ando Kuypers | TNO / Holst Centre
- Anja Härtel | EFDS e.V.

#### Data protection declaration

We would like to inform you that the event will be documented photographically. By participating, you agree that all pictures taken may be used by the EFDS for communication and marketing purposes. In accordance with your consent when registering online, a list of participants with names and company affiliation will be compiled and published exclusively conference in the proceedings. The data will be collected in accordance with the privacy policy of the European Society of Thin Films. The data protection declaration can be found at

https://efds.org/en/privacy-policy-2/.