

## Wednesday 16<sup>th</sup> October 2019

**08.00 – 18.00**      **REGISTRATION DESK OPEN AT THE DITF & FESTHALLE DENKENDORF**

**08.00 – 08.30**      **WELCOME COFFEE & NETWORKING**

**08.30 – 13.00**      **GUIDED TOUR OF RESEARCH LABORATORIES AND ROUNDTABLE DISCUSSIONS**

**13.00 – 13.30**      **BUS TRANSFER TO THE CONFERENCE LOCATION (FESTHALLE & HAUSMEISTER)**

**13.30 – 14.30**      **LUNCH & NETWORKING**

**13.30**              **OPENING OF THE POSTER SESSION & THE TABLETOP EXHIBITION**

**14.30 – 14.40**      **OPENING AND WELCOME ADDRESS BY PIERRE WIERTZ, GENERAL MANAGER OF EDANA**



**14.40 – 15.25**



**KEYNOTE SPEECH:  
NONWOVENS: SUSTAINABILITY – CHALLENGES AND OPPORTUNITIES**

- Sustainability
- New Materials – Opportunities and challenges
- PLA, PBS, PHA, PHB, PCL

**Behnam Pourdeyhimi**, Associate Dean for Industry Research and Extension  
**William A. Klopman**, Distinguished Professor, Executive Director, **The Nonwovens Institute** (United States)

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### **SESSION 1: NONWOVENS TECHNOLOGY**

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**MODERATOR**



**Martin Dauner**, Head of Dept. for Filament and Nonwoven Technologies, **DITF** (Germany)

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15.25 – 15.50



### “MICRONEEDLING” – INTENSIVE NEEDLING THROUGH HIGHEST NEEDLE DENSITIES AND FINEST BARBS – FUTURE ALTERNATIVE TO WATER ENTANGLEMENT?

- Needling instead of water entanglement
- Crosslapped batt versus carded web
- MD: CD = 1 : 1
- No water consumption, low energy requirement
- Reduced investment

**Johann Philipp Dilo**, CEO, **DiloGroup** (Germany)

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15.50 – 16.15



### SELF-OPTIMIZING EFFICIENCY IN PNEUMATIC STAPLE FIBRE TRANSPORT BY DEVELOPMENT OF INNOVATIVE MEASUREMENT

- Pneumatic fibre transport in nonwoven production causes high energy consumption and is mostly operated at 100 %
- Research has been done to measure the transport quality using innovative measurement
- Based on transport quality, transport fan speed can be lowered to save at least 30 % of energy
- Industrial trials have been performed for validation

**Christian Möbitz**, Scientific Researcher, **Institut für Textiltechnik der RWTH Aachen University** (Germany)

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16.15 – 17.00

**COFFEE BREAK IN THE POSTER SESSION / TABLETOP EXHIBITION AREA**

17.00 – 17.25



### OPTIMIZATION OF THE CARDING PROCESS BASED ON BIG DATA ANALYTICS

- Multidimensional optimization problem in the nonwoven production (quality vs. production cost)
- Measurement system of quality data, machine settings and surrounding conditions during the process
- Modelling, simulation and optimization of the product quality and production cost

**Frederik Cloppenburg**, Head of Research Group Nonwoven Technology, **Institut für Textiltechnik der RWTH Aachen University** (Germany)

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17.25 – 17.50

### TACKLING THE FORMALDEHYDE CHALLENGE: NEW LATEX BINDER INNOVATION FOR TECHNICAL TEXTILES



- Why formaldehyde emission is critical and where it is coming from?
- Why crosslinking is necessary and what benefits it brings?
- Introduction of novel FA-free self-crosslinking platform for various chemistries
- Proof of concept using application examples
- Outline the advantages for the nonwovens industry

**Matthias Renka**, Technical Service Manager, **Synthomer Deutschland** (Germany)

17.50 – 18.15

### NONWOVENS AS A TOOL TO SUSTAINABLE TOPICAL INNOVATIONS



- New materials and new applications from a sustainability perspective
- Clean chemistry for nonwovens
- Cellulose and other polysaccharides for nonwovens

**Parikshit Goswami**, Director of Technical Textile Research Centre, **University of Huddersfield** (United Kingdom)

18.15 – 19.00

### NETWORKING IN THE POSTER SESSION / TABLETOP EXHIBITION AREA

19.00

### BUS TRANSFER TO THE ALTES RATHAUS OF ESSLINGEN

19.30 – 21.30



### EDANA Cocktail Party & the NIA Posters Contest Awards Ceremony at the Altes Rathaus

The ideal opportunity for relaxed networking.

Dress code: business casual



## Thursday 17<sup>th</sup> October 2019

08.30 – 17.00

**REGISTRATION DESK OPEN AT THE FESTHALLE & HAUSMEISTER**

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08.30 – 09.00

**WELCOME COFFEE & VISIT OF THE POSTER SESSION / TABLETOP EXHIBITION**

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### **SESSION 2: MATERIALS & RECYCLING**

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**MODERATOR**



**Stephen Russell**, Professor of Textile Materials & Technology, **University of Leeds** (United Kingdom)

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09.00 – 09.25

**BAST/ BASALT FIBRE HYBRID STRUCTURES AS REINFORCEMENT IN POLYMERS TO IMPROVE THE MECHANICAL PERFORMANCE PROFILE OF NATURAL FIBRE REINFORCED COMPOSITES**

- Thermoset and thermoplastic composites with bast and basalt fibres
- Manufacturing
- Tensile, flexural and energy absorption properties analysis

**Anjum Saleem**, Scientific Researcher, **Hochschule Kaiserslautern** (Germany)

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09.25 – 09.50



**SIZING? NO, THANKS. COMPENSATING THE PROCESS OF RESIZING RECYCLED CARBON FIBRES**

- Using recycled carbon fibres as high performance material
- Modified matrix materials for recycled carbon fibres without sizing
- Ways to compensate the sizing of carbon fibres
- Production of rCF-nonwovens and sheets
- Outlook into the future of rCF

**Jonas Broening**, Scientific Researcher, **ITA RWTH Aachen (Institut für Textiltechnik der RWTH Aachen University)** (Germany)

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09.50 – 10.15



## CHEMICAL RECYCLING OF TEXTILE WASTE AND NONWOVEN BY DEPOLYMERIZATION THROUGH GLYCOLYSIS

- Production waste was successfully depolymerized with high yield using an inorganic catalyst
- Carbon black pigments and other contaminations could be separated from the monomer in the process
- Analyses show high purity of the obtained white monomer
- Re-polymerization results in PET suitable for melt spinning of new polyester fibres

**Karin Lindqvist**, Researcher, **RISE Research Institutes of Sweden** (Sweden)

10.15 – 10.45

COFFEE BREAK IN THE POSTER SESSION / TABLETOP EXHIBITION AREA

## SESSION 3: SPINNING TECHNOLOGY

MODERATOR



**Behnam Pourdeyhimi**, Associate Dean for Industry Research and Extension  
**William A. Klopman**, Distinguished Professor, Executive Director, **The Nonwovens Institute** (United States)

10.45 – 11.10



## HIGH TEMPERATURE WEBS GO TO FINEST FIBRES

- Meltblow webs of PPS and PEEK with new Exxon type die concept to reduce fibre size within increasing polymer throughput
- New nozzle concept with single die quenching compared to meltblow
- Impact of water entangling vs. calendaring regarding advantages for different applications

**Ingo Windschiegl**, Research Associate, **DITF** (Germany)

11.10 – 11.35



## MODELING AND SIMULATION OF MELTBLOWN PROCESSES FOR FINE FIBRE NONWOVENS

- Breakthrough in physical modeling and simulation of spinning processes for meltblown nonwovens
- Deep understanding of upper uniaxial drawing and additional stochastic stretching by coupling with turbulent air flow
- Analysis concerning resulting fibre diameter distribution and laydown behavior
- Optimization potential concerning designated mean and spread in fibre diameter distribution

**Dietmar Hietel**, Head of Department Transport Processes, **Fraunhofer Institute for Industrial Mathematics ITWM** (Germany)

11.35 – 12.00



### **SOLUTION BLOWN: THE NOVEL VERSATILE TECHNIQUE FOR CROSSLINKING HYDROXYPROPYL CELLULOSE (HPC) HYDROGEL NONWOVEN AND MICROCAPSULES CELLULOSE NONWOVEN**

- HPC nonwoven and crosslinked HPC hydrogel nonwoven
  - Preparation of the HPC hydrogel nonwoven
  - Characterization and analysis of the microstructures of fibres of hydrogel nonwoven, swelling and wetting behaviour
- Microcapsules cellulose nonwoven
  - Candidate solution blown nonwoven systems for introducing microcapsules in the cellulose-based nonwoven
  - Introducing model and active substances encapsulated microcapsules in nonwoven fibres

**Ting Yang Nilsson**, Senior Scientist Textiles, **RISE Research Institutes of Sweden** (Sweden)

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12.00 – 13.00

**LUNCH BREAK & VISIT OF THE POSTER SESSION / TABLETOP EXHIBITION**

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## **SESSION 4: MEDICAL**

**MODERATOR**



**Mårten Alkhagen**, Manager Textiles, **RISE Research Institutes of Sweden**

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13.00 – 13.25



### **NONWOVEN-HYDROGEL MEMBRANE TECHNOLOGIES FOR SPINAL CORD AND ORTHOPAEDIC TISSUE REGENERATION**

- Clinically led development of nonwoven electrospun membranes
- Tuning of fibre alignment to drive neurite extension and inclusion of neural cells into a hydrogel for spinal cord applications
- Development of a barrier membrane, with random fibre alignment allowing for spontaneous mesenchymal stem cell alignment for surgical treatment of critical size bone defects

**Heather Owston**, Research Fellow, **Clothworkers Centre for Textile Materials Innovation for Healthcare - University of Leeds** (United Kingdom)

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13.25 – 13.50



## DESIGNING NONWOVENS IMPLANTS

- Nonwoven implants define space, host tissue or forming a cell barrier.
- Accordingly pore size, porosity, drape-ability are more important than strength.
- The implications of the unconventional needs will be presented based on a current development.
- The production technology is miniaturized but versatile and in first line easy to clean.

**Martin Dauner**, Head of Dept. for Filament and Nonwoven Technologies, **DITF** (Germany)

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## SESSION 5: APPLICATIONS

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### MODERATOR

**Parikshit Goswami**, Director of Technical Textile Research Centre, **University of Huddersfield** (United Kingdom)

13.50 – 14.15



## SUSTAINABLE DRONES – DRONE-WING PRODUCTION FROM BIO-THERMOPLASTIC COMPOSITES BASED ON 3D NEEDLEPUNCHING FABRIC

- Drones
- Thermoplastic bio composites
- Nonwoven
- Composite manufacturing

**Raphael Geiger**, Assistant Professor, **University of Southern Denmark** (Denmark)

14.15 – 14.40



## DURABLE HYDROENTANGLED NONWOVEN FABRIC FOR CLOTHING APPLICATIONS

- Active role of advanced techniques of nonwoven fabrics in apparel applications
- Comparison of hydroentangled apparel fabrics with conventional woven fabrics
- Applications of developed hydroentangled fabrics in clothing industries

**Muhammad Cheema**, Business Manager, **U S Apparel** (United Kingdom)

14.40 – 15.10

**COFFEE BREAK IN THE POSTER SESSION / TABLETOP EXHIBITION AREA**

15.10 – 15.35



### STRUCTURED FIBRES FOR POROUS NONWOVEN ABSORBER

- Basics about acoustic, absorption
- Necessity and aptitude of nonwovens
- Computation of the acoustic parameters
- Influence of the fibre parameters (diameter, section, surface etc.) on the sound absorption coefficient

**Patrick Engel**, Scientific Researcher, **STFI (Sächsisches Textilforschungsinstitut)** (Germany)

15.35 – 16.00



### CARBON NANOTUBE SENSORS FOR STRUCTURAL HEALTH MONITORING OF NONWOVEN MATERIALS

- Ensembles of carbon nanotubes (CNTs) decorated on the glass fibre based nonwoven materials were prepared and optimized using a vacuum filtration process
- Real-time *in situ* monitoring of damage evolution in nonwoven materials using network of carbon nanotubes
- Sensing the evolution of various types of nonwoven damages (horizontal cut, inclined cut, vertical cut) by network of carbon nanotubes

**Dr. Amit Rawal**, Professor, **Indian Institute of Technology Delhi** (India)

16.00 – 16.25



### DEVELOPMENT OF BIOMIMETIC SIMULATION-BASED TEXTILE STRUCTURES FOR NOVEL SOLUTIONS FOR MOISTURE EVAPORATION, SEPARATION AND SUPPLY OF PLANTS IN GREENHOUSE

- Biomimetic
- Solar collector, water evaporation, condensation, water storage, capillary forces, greenhouse, water circle

**Dr. Thomas Stegmaier**, Head of Technical textiles, Surface Technology, Environmental Technology, Bionics, **DITF** (Germany)

16.25 – 16.30

### CLOSING WORDS

17.00

### BUS TO STUTTGART AIRPORT AND TRAIN STATION

**EDANA would like to thank** the Deutsche Institute für Textile+FaserForschung (DITF) for hosting the NIA 2019 as well as the members of the EDANA Support for Innovation and R&D Working Group.