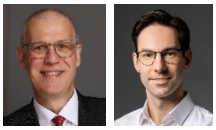
December 10, 2025

Wednesday, March 4, 2026

09:00 – 09:30

Transforming Adhesive R&D with Data Management and Artificial Intelligence



Albert Invent; US-Oakland
Dr. Volker Erb and Dr. Moritz Haus

Abstract:
The adhesives industry is undergoing a fundamental transformation through digitalization and the application of artificial intelligence (AI). By systematically capturing, structuring, and analyzing experimental and formulation data, organizations can accelerate innovation cycles and significantly reduce time-to-market. Central challenges remain: the inherently high-dimensional design space of coating formulations and the difficulty of structuring R&D data to be "AI-ready".

A modern, domain-specific data management infrastructure provides the foundation for overcoming these barriers. When combined with advanced AI and machine learning, such platforms enable rapid compliance with evolving regulatory and sustainability requirements, efficient substitution of raw materials to mitigate supply chain risks, optimization of critical performance properties, and overall cost reduction.

This presentation will highlight case studies demonstrating how an end-to-end R&D platform streamlines the generation of high-quality, AI-compatible datasets, facilitates collaboration among large, distributed scientific teams, and enhances reproducibility of formulation workflows. We will illustrate tangible outcomes, including compressing development timelines from months to days, achieving performance benchmarks beyond conventional limits, and pioneering new digital business models for the adhesive sector.

Regardless of an organization's current stage of digital maturity, this session will provide scientifically grounded use cases and strategic considerations for implementing end-to- end R&D platforms, laying the groundwork for a data-driven innovation.

09:30 – 10:00

Development of an Extrusion-Lamination Bonding Technology Using Crosslinkable EVA for High-Performance Adhesive Joints

Dresden University of Technology, Institute of Building Construction; DE-Dresden
Dr. Christiane Kothe*, Prof. Dr.-Ing. Michael Engelmann

Abstract:
Modern lightweight and multifunctional composites play a key role in sustainable building construction, demanding joining technologies that enable durable, transparent and material-efficient assemblies. Conventional liquid adhesives are often unsuitable for such applications due to limitations in shape control, curing behavior and optical quality. To address these challenges, a new bonding technology was developed. Ethylene-vinyl-acetate (EVA) was selected as base polymer due to its excellent optical clarity, adhesion and aging resistance known from glass lamination. However, its use as a structural adhesive required a new processing concept, leading to the development of a two-step extrusion-lamination process with controlled thermal crosslinking. EVA grades with vinyl-acetate contents of 28 to 40 % were modified with organic peroxide and systematically characterized regarding extrusion behavior, degree of crosslinking and adhesive performance. In shear tests, the optimized formulations achieved up to three times higher adhesive strength compared to conventional hot melt adhesives, while aging experiments confirmed stable adhesion and transparency under thermal and UV exposure.

10:00 – 10:30

Next Generation 2-in-1 Coating: MS Polymer Based Waterproofing and Tile Adhesive System

Kaneka; BE-Westerlo-Oevel
Tom Leemans

Abstract:
Through the years Kaneka has developed several types of silane terminated polyethers (known to the market as Kaneka MS Polymer™). A special and exclusive group within this polymer range are the acryl modified MS Polymer™, a blend of silyl modified polyacrylates and silane terminated polyethers.

The combination of polymers with a different chain composition and structure allows strict control on morphology, compatibility and even glass transition temperature (Tg). It results in polymers with unique properties like adhesion to plastics and dissimilar materials, combined with a high-strength level adhesion. An overview of the latest developed low viscosity high strength polymers and reactive diluents will be shown, together with their unique properties. With this technology a continuous progress is achieved both in polymer design and practical applications.

An innovative combination of applications will be presented (e.g. tile adhesive with waterproofing properties) and the benefits that come with this. The continuous development of these new polymer grades shows that Kaneka MS Polymer™ remains a key technology for the future and provides solutions for changing applications.

About Kaneka Belgium N.V.:
Founded in 1970, Kaneka Belgium N.V. was the first overseas subsidiary of the chemical company Kaneka Corporation, headquartered in Osaka, Japan. Traditionally Kaneka Belgium has been active in the field of high-performance MBS and acrylic polymers (Kane Ace™), liquid polymers (Kaneka MS Polymer™) and light weight expandable plastics (Eperan™). By embracing research and science, its innovative and safe technologies benefit many aspects of people's daily lives and contribute to a better ecosystem.

10:30 – 11:00 REFRESHMENT BREAK

11:00 – 11:30

Permanently Plastic Sealants for Easy to Repair Electric Vehicle Batteries

Drei Bond; DE-Ismaning
Dr. Florian Menk

Abstract:
With the publication of the new EU battery regulation from 2023 and the regulation on circularity requirements for vehicle design being in the draft status, it has become clear that electric vehicle batteries must be replaceable and repairable "in a readily and non-destructive manner" in the near future.

While the sealing of the battery housings must prevent corrosive infiltration and ensure tightness during use, e.g. to prevent water from entering, on the one hand, the sealant technology should, on the other hand, allow easy disassembly for repair cases and at the end of the battery's life cycle.

The use of common sealants poses many challenges when it comes to implementing all these requirements combined, especially with regard to a production-optimized design (groove, chamfer, recesses, etc. lead to increased complexity). Moreover, opening a battery housing usually requires considerable effort plus time and, typically, results in damage of the cover and/or housing.

Permanently plastic sealants offer immense potential for simplification here. They combine easy processability (no skin formation, no pot life, no high temperatures, etc.) and efficient corrosion protection with the ability to open the battery housing in a simple and non-destructive way. Thus, permanently plastic sealants enable easy repairability without complex design and process requirements

---

11:30 – 12:00

Selecting Efficient and Reliable Thermally Conductive Adhesives for Next Gen Battery Pack Design in e-cars

Henkel Adhesive Technologies; DE-Düsseldorf
Holger Schuh

Abstract:
The transition to next-generation battery architecture, such as Cell-to-Pack (CTP), introduces new challenges for thermal management and structural integrity. Thermally conductive adhesives play a critical role in ensuring efficient heat dissipation, mechanical stability, and long-term reliability. This keynote explores the key selection criteria for adhesives in advanced battery systems, addressing performance under high power density, safety requirements, and manufacturability. Beyond material properties, digital innovation is reshaping development processes: AI-driven formulation design, predictive simulation models, and Big Data analytics enable faster optimization and validation of adhesive solutions. By leveraging these tools, engineers can reduce development cycles, improve accuracy in thermal performance predictions, and adapt to evolving EV market demands. Join us to discover how combining material science with digital intelligence creates a robust pathway for designing efficient, reliable, and scalable battery packs for the future of e-mobility.

12:00 – 12:30

Influence of Battery Breathing on the Fatigue Life of Adhesive Bonds in Structural Batteries

University of Braunschweig / IFS; DE-Braunschweig
Michael Griese*, Elisabeth Stammen and Univ.-Prof. Dr.-Ing. Klaus Dilger

Abstract:
As battery electric vehicles gain major market shares of the overall car market, their most important component, the battery pack keeps evolving in a rapid manner. The further development of the design of the battery pack is of utmost importance for automotive companies and therefor new designs are introduced. Nowadays, automotive battery packs consist of battery modules which host several cells and which are integrated into a battery pack. To get rid of these auxiliary structures and to increase the overall energy density of the battery packs, new approaches like cell-to-pack or cell-to-chassis are being introduced. In these designs, the battery cells are directly bonded into the battery pack using structural adhesives to get rid of the module casings or in case of the cell-to-chassis designs, to make them part of the automotive structure and to increase the stiffness of the car body. When battery cells are charged, their electrodes expand due to the intercalation of ions. This effect, called the battery-breathing-effect, is reversible and diminishes when discharging of the cell takes place. Nonetheless, it can threaten the structural integrity of the cell [1] and with advanced cell-chemistries like silicon-rich electrodes, this effect is likely to increase [2]. Due to the deformation of the cell, the surrounding adhesive bondlines are also affected and can be damaged if not properly designed.

In this work, an approach to measure the deformation of the battery cells due to the battery-breathing-effect during charging is presented. The measured deformations are then passed into a numerical model of the battery cell, which is integrated into the battery pack via adhesive bondlines. The resulting stress distributions inside the adhesive are predicted numerically and cyclic tests for fatigue analysis are presented.

[1] M Spielbauer, M Steinhardt et al. Batteries, Vol. 9, 6 (2023).
[2] X. Xiao, W Zhou et al. Adv. Funct. Mater. Vol. 25 (2015).

12:00 – 13:00 LUNCH

13:30 – 14:00

Advanced Cold Curing Bonding Solutions Enabling Modular Vehicle Assembly

DuPont; CH-Freienbach
Dr. Felix Koch

Abstract:
Coming soon

14:00 – 14:30

Lighter & Stronger –
Next Generation High Performance Eco-friendly STP Adhesives

Siloxene; CH-Brüttisellen
Dr. Matthias Koebel

Abstract:
Coming soon

14:30 – 15:00

Fatigue and Impact Resistant Structural Adhesive for Lightweight Light Motor Vehicles

L&L Products; FR-Altorf
Dr. Michel Awkal

Abstract:
Light motor vehicles are generally made of metal and are assembled by welding. By replacing these metallic structures with polymer composite materials, it is possible to reduce weight and therefore reduce energy consumption or increase payload of light motor vehicles. Welding can't be used for fabricating thermosetting polymer composite structures. Therefore, an alternative fabrication method must be used. If possible, adhesive bonding generally produces the best outcome for high performance composite assembly.

We have created a heat-activated adhesive that allows for successful structural bonding and cures at temperatures that will not damage the structural composite structure. It is understood that light motor vehicles can be subjected to extensive cyclic loading while also expected to resist single event high stress loading conditions. The combination of high strength combined with high fracture toughness to resist cyclic loading conditions is a longstanding difficult set of circumstances for structural adhesives to satisfy.

By utilizing a proprietary combination of phase-separating toughners, high molecular weight polymers, and ingredients that enable localized yielding, L&L Products' adhesive demonstrates high plastic nature combined with high toughness to enable high fatigue and impact resistance.

The formulation methodology used has enabled creation of a product that has excellent resistance to cyclic bending fatigue combined with high impact resistance.

During this presentation, we will discuss the performance needs for such an adhesive, describe the validation methods and results to verify performance, and then discuss how material composition enabled creation of a successful adhesive.
Other important properties such as storage at room temperature, ease of handling, and short curing time will be explained.

15:00 – 15:30

Silane-Epoxy Adhesives: Bridging Challenges, Bonding Futures

Collano; CH-Sempach Station
Joshua Avossa

Abstract:
Silane–epoxy adhesives have emerged as a key technology for addressing complex multi material bonding challenges across diverse industries. Their unique chemistry enables durable adhesion to metals, polymers, and composites, sup-porting applications from high performance sports equipment to façade systems, lightweight vehicle structures, and ballistic protection components.

Following a company merger, the continued development of this adhesive technology entered a period of transfor-mation. Reformulation efforts were driven by new regulatory demands and the need for global compliance under evolv-ing chemical frameworks. These changes exposed deeper challenges—supply chain adaptation, requalification of raw materials, and knowledge transfer between legacy teams and new experts. Each aspect required balancing chemical performance with operational resilience and environmental responsibility.

This period became both a test and a catalyst. Through cross functional collaboration between R&D, production, and customer support, the project evolved from stabilization toward innovation. Process optimization at pilot and production scales improved product consistency, while closer customer engagement guided prioritized performance targets. The resulting silane–epoxy portfolio stands as evidence of how technical rigor, communication, and adaptability can sustain progress under change—preserving the adhesive's original purpose: to bridge materials, and ultimately, to bond futures.

15:30 FAREWELL
