November 10, 2026

March 10, 2027 18:30 – 20:00 h

GET TOGETHER **sponsored by** L&L Products

TBA
Bostik; US-Wauwatosa
Helena Cheminet



Abstract:
Coming soon

CNSL in Polyurethane Adhesives:
Applications, Performances and Benefits in a Nutshell
Cardolite Specialty Chemicals Europe; BE-Mariakerke
Tom Berckmans



Abstract:
Cashew Nut Shell Liquid (CNSL) is a non-edible natural oil obtained as a by-product of the Anacardium Occidentale nut.

Its main component (cardanol) is characterized by favorable sustainability profile (LCA) as well as unique chemical features (presence of aromatic ring, phenoxy groups, alkenyl side chain), that allow a variety of chemical modifications and its industrial use in a wide range of thermosetting materials, from polyurethane systems to friction polymers.

This Paper will present the performances of cardanol and its hydroxyl-functional derivatives (diols and polyols) in different polyurethane adhesives formulations, highlighting their benefits (e.g. viscosity reduction; balanced reactivity; hydrophobicity; chemical resistance; adhesion on different substrates) in reference applications (e.g. hot-melt adhesives; packaging adhesives; TPUs; PUDs).

Fossil- and bio-based derivatives with comparable QC properties will be used as comparison.

Hidden Bonds, Loud Music:
Adhesive Insights from Musical Instrument Makers
Collano; CH-Sempach Station
Dr. Raphael Schaller



Abstract:
Munich has long been a center of musical instrument craftsmanship, home to renowned makers such as luthier Hermann Hauser Sr. and flute innovator Theobald Böhm. Behind every instrument that fills a concert hall lies a network of joints and bonded material interfaces that rarely draw attention — yet without them, no sound would ever be produced. This talk explores the hidden role of adhesives in two families of musical instruments: chordophones (zithers, dulcimers, harpsichords, guitars) and aerophones (accordions, organs, alpine horns). In chordophones, adhesive joints must transmit string tension and vibration across soundboards, ribs, and bridges without damping the tone or failing under decades of mechanical and climatic stress. In aerophones, bonded joints in bellows, reeds, pipework, and wind chests must remain airtight while tolerating the flexing, humidity swings, and thermal cycling typical of both indoor and open-air use. The presentation reveals insights from musical instrument makers on how the choice of adhesive eases manufacturing processes and influences acoustic transmission, damping behavior, and long-term durability.

Table Top Exhibition

Next Generation two Component Structural Adhesives for Lean Manufacturing in Modern Electric Vehicle Designs



Specialty Electronic Materials Switzerland (DuPont); CH-Freienbach
Dr. Felix Koch

Abstract:
Coming soon

Phosphorus-Containing Dynamic Polymer Networks for Fire-Safe and Sustainable Adhesives



Empa - Swiss Federal Laboratories for Materials Science and Technology; CH-St. Gallen
Dr. Sabyasachi Gaan

Abstract:
Adhesives are central to lightweight construction, composites, electronics, wood bonding, and transportation, yet many high-performance adhesive systems rely on permanently crosslinked thermosets that are difficult to repair, debond, or recycle. At the same time, adhesive joints in demanding applications must meet strict fire-safety requirements without compromising durability or introducing persistent halogenated additives. Phosphorus chemistry offers a powerful route to address these coupled challenges because it combines efficient halogen-free flame retardancy with versatile reactivity for building dynamic covalent polymer networks.

This presentation will discuss recent developments in phosphorus-containing covalent adaptable networks as a molecular design platform for fire-safe and sustainable adhesives. Selected will show how phosphorus-based dynamic motifs, including transphosphonation, retro-Michael addition, amino-ester exchange, and β-aminophosphine oxide chemistry, can be integrated into crosslinked networks to enable stress relaxation, interfacial healing, thermomechanical reprocessing, and potential debonding-on-demand. These dynamic networks retain the thermal and mechanical integrity required for adhesive applications while introducing intrinsic flame-retardant functionality through covalently incorporated phosphorus units. By uniting adhesion, fire protection, repairability, and end-of-life circularity within one chemistry platform, phosphorus-containing dynamic polymer networks provide a promising strategy for next-generation adhesives designed for safer use, longer service life, and more sustainable material cycles.

Silica and Silanes for the Control of Reinforcement and Crosslinking in Adhesives



Evonik Industries; DE-Hanau-Wolfgang
Prof. Dr. Wojciech Pisula

Abstract:
The performance of modern adhesive systems relies on the precise control of both mechanical reinforcement and network formation. Silica additives and organofunctional silanes provide complementary approaches to tailoring these properties. While AEROSIL® fumed silica acts as an effective rheology modifier and reinforcing filler, DYNASYLAN® silanes promote adhesion and contribute to crosslinking and network development. This presentation highlights the synergistic use of novel silica and silanes in adhesive formulations. The impact of silica surface modification on viscosity, thixotropy, and mechanical performance will be discussed. Furthermore, the effects of multi-functional silanes of different molecular symmetries on cross-linking and adhesion will be presented. Selected examples from prominent silane-terminated polymer and polyurethane adhesive systems demonstrate how these AEROSIL® and DYNASYLAN® technologies can be combined to tune rheology, reinforcement, and cross-linking characteristics. The presentation provides practical guidelines for the development of adhesive formulations with enhanced processing, reliability, and long-term performance.

Table Top Exhibition

Digitalizing Adhesive Bonding:
Towards Connected and Traceable Manufacturing Processes



Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM; DE-Bremen
Dr. Holger Fricke*, Dr. és Sc. Till Vallée, Tobias Evers

Abstract:
Adhesive bonding has become a key enabling technology in modern automotive manufacturing. Lightweight multi-material structures, battery systems, fuel cells, sensors, and electronic components increasingly depend on reliable bonding processes. At the same time, the automotive industry faces growing demands regarding quality and efficiency. These requirements are driving the digital transformation of joining technologies into Industry 4.0 environments. Unlike conventional joining technologies, the quality of a bonded joint cannot be completely verified after production without destructive testing. Therefore, quality assurance must be achieved through comprehensive monitoring and control of the manufacturing process itself. This requires a holistic view of the entire process chain, including material storage, conditioning, dosing, mixing, application, curing, and quality-relevant environmental influences. To address these challenges, the research project **DigiKleb** has established a demonstration center for digitally connected adhesive bonding at Fraunhofer IFAM in Bremen. The project builds on the results of the predecessor project **Kleben 4.0**, in which an OPC UA-based information model for adhesive bonding was developed. This information model provides a standardized semantic description of bonding-related process and machine data and enables communication across equipment from different manufacturers. As a result, adhesive bonding processes can be integrated more easily into modern production architectures and smart factory concepts. The DigiKleb demonstration center serves as a platform for research, industrial validation, training, and technology transfer. The presentation will provide an overview of the DigiKleb project and demonstrate how digital technologies can support automotive bonding applications.

[1] Web-Link: kleben4punkt0.ifam.fraunhofer.de
[2] M. Lütjen et al., DOI: 10.1515/zwf-2024-0134, ZWF 120 (2025)

Beyond Thermal Conductivity
How Next-Generation Battery Designs Redefine Thermal Interface Materials



Henkel Adhesive Technologies; DE-Düsseldorf
Holger Schuh

Abstract:
From Gap Fillers and Thermally Conductive Adhesives to Mechanically Adaptive Interfaces for Solid-State, Cell-to-Pack and Cell-to-Chassis Batteries
Central Thesis:
The next generation of battery thermal interface materials will no longer be defined by W/mK alone.
Mechanical compliance, adhesion, dynamic bondline behavior, cell breathing, pressure management and structural integration will increasingly determine real-life thermal performance and reliability in Cell to Pack and Cell to Chassis Battery Designs

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TBA



Jowat; DE-Detmold
Dr. Hartmut Henneken

Abstract:
Coming soon

"Strong" under Fire:
Gluing Structure in Military Vehicle Construction – Handout and Practical Example of Ballistic Protection Integration

IDG - Consulting; DE-Egling an der Paar
Dr.-Ing. Jan-Dirk Glaser



Abstract:
Structural adhesive bonding has become an established joining technology for connecting metallic and non-metallic materials in vehicle and protection solutions for the military, police, and industrial sectors. Compared to conventional mechanical joining methods, it enables uniform load transfer and avoids local stress concentrations, offering both design and functional advantages—particularly with hybrid material systems. However, in ballistic protection applications, the focus is not solely on static stability requirements; the adhesive bond must also reliably maintain its structural integrity under the highly dynamic loads resulting from ballistic impacts, explosions, and shock events.

Coming soon: The new DIN 35253 –
A Straight Forward Sustainability Assessment of Bonded Structures

KLEBTECHNIK Dr. Hartwig Lohse; DE-Breitenberg
Dr. Harwig Lohse



Abstract:
Many modern products and structures, in the form in which we know and use them, would be almost inconceivable today – and in the future – without the use of adhesives. Against the background of the Circular Economy Action Plan, adhesively bonded products and structures are suspected of being contrary to environmental sustainability, as their apparent – but in fact non-existent – inseparable nature prevents the adhesive bonds from being detached, which is necessary, for example, for repairs and mechanical recycling.

On the other hand, adhesive bonding technology has the potential to support the other goals of the circular economy (known as the 'R' strategies), such as resource efficiency – both in production and in use of products – and their longevity.

As it is often not possible to combine all circular economy strategies within a single product, the respective advantages and disadvantages of a product must be identified and assessed. However, established methods, such as Life Cycle Assessment, are rather resource intensive. The new DIN 35253 standard, currently being developed by DIN, is intended to fill this gap. It describes the procedure for a qualitative, comparative sustainability assessment of assembled products and is based on the assessment criteria for all R-strategy elements, in the order of priority specified by the European Commission.

The presentation will introduce the concept of this sustainability assessment and illustrate the procedure using a specific practical example: the comparison of a double-glazed window in which the multi-pane insulating glass unit is bonded into the frame made of PVC profiles, compared with a conventionally manufactured window in which the multi-pane insulating glass unit is positioned within the window frame using special glazing blocks and fixed in a load-bearing manner.

Progress Through Retraction:
Rethinking Contact Angles to Probe Surface Activation and Joint Performance



KRÜSS; DE-Hamburg
Patrick Swolana*, Thomas Willers, Andrew Mellor, Katharina Wulz

Abstract:
Contact angle measurement has long been used to judge whether a surface is ready for bonding. It is used to assess the surface condition, for example after plasma, corona or flame treatment or cleaning. Although static contact angles are widely used, the receding contact angle is more sensitive to contamination and incomplete activation, which are decisive for adhesion. Dynamic measurements are rarely used because they are complex and time-consuming. We introduced the Stood-up Drop (SUD) technique to solve this problem. With this technique, it is possible to determine the receded contact angle within seconds instead of hours. By initially spreading a water drop into a thin film and subsequently allowing capillary forces to retract it into a stable "stood-up" configuration (see figure 1), the method ensures that the measured angle reflects a dewetting state, as recently demonstrated in Soft Matter (2026)[1].

In this contribution, we summarize two years of applied laboratory work and customer-driven studies highlighting the method's broad relevance. Representative examples include adhesion prediction for pressure-sensitive adhesives and PU-based glues, optimisation of plasma and flame treatments as well as cleanliness evaluation prior to bonding. In correlations with reference tests like peel strength or lap-shear strength measurements for adhesive joints, the receding contact angle accessed via the SUD proved markedly more sensitive with wider discrimination scales and reduced scatter compared to advanced or static angles.

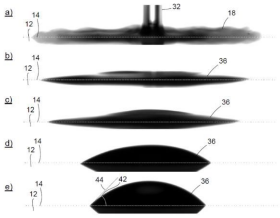


Figure 1. Temporal evolutions (from top to bottom) of "Stood-up drop" drop deposition process.

References
1. Díaz, D.; Bhargava, A.; Walz, F.; Sharif, A.; Summaly, S.; Berger, R.; Kappl, M.; Butt, J-H.; Lohse, D.; Willers, T.; Vollmer, D.; Sanjay, V. Soft Matter 2026, 22, 657–667

Evolution of FST Aeronautic Portfolio



L&L Products; FR-Altorf
Dr. Claudio Toncelli

Abstract:
Aramid honeycomb structures are widely utilized in the manufacturing plane interior thanks to their lightweight and unidirectional structural strength.

However, binding different honeycombs for the assembly of plane interior can be highly challenging due to the low surface energy of aramid structures as well as the adequate compromise between the necessary fire-retardant properties and the mechanical strength that the adhesive needs to sustain. Indeed, different fire retardants are currently added in the formulation to assure absence of burning and incandescent drips, low smoke opacity and toxicity although their lack of connection with the thermoset network provoke a decrease in the subsequent mechanical properties.

Within this delicate balance of properties, L&L products have shown an evolution of open time and curing time of the respective adhesives to answer the needs of the customer to accelerate their manufacturing process and therewith their fabrication costs. In this respect, a careful tuning of the curing kinetics has been achieved by looking at the substitution degree of the cross-linker as well as its rigidity to assure both mechanical strength and faster curing times.

Table Top Exhibition

De-bonding and Re-bonding Performance of Euglena-Based Structural Adhesive



National Institute of Advanced Industrial Science and Technology (AIST); JP-Tosu
Nao Terasaki Ph.D*, S. Horiuchi, H. Akiyama, K. Shimamoto, T. Himiyama, M. Shibakami

Abstract:
Bio-based adhesives have attracted attention as sustainable alternatives to petroleum-derived materials, but their practical application remains limited by insufficient mechanical performance. Here, we demonstrate a bio-based adhesive derived from Euglena gracilis that combines high structural performance with circularity. Paramylon, a 1,3-β-glucan, exhibited a tensile shear strength of approximately 30 MPa when bonding aluminum, GI steel, and glass adherends, demonstrating its potential for structural applications in mobility systems. The paramylon adhesive also possesses thermoplastic hot-melt characteristics, enabling easy disassembly by heating without damaging the adherends. Furthermore, separated adherends can be reassembled by reheating the adhesive layer, with the original bonding strength almost completely restored over multiple reuse cycles. In this presentation, we introduce the bonding, debonding, and rebonding performance of this Euglena-based structural adhesive, together with a new evaluation method and index for quantifying these properties.

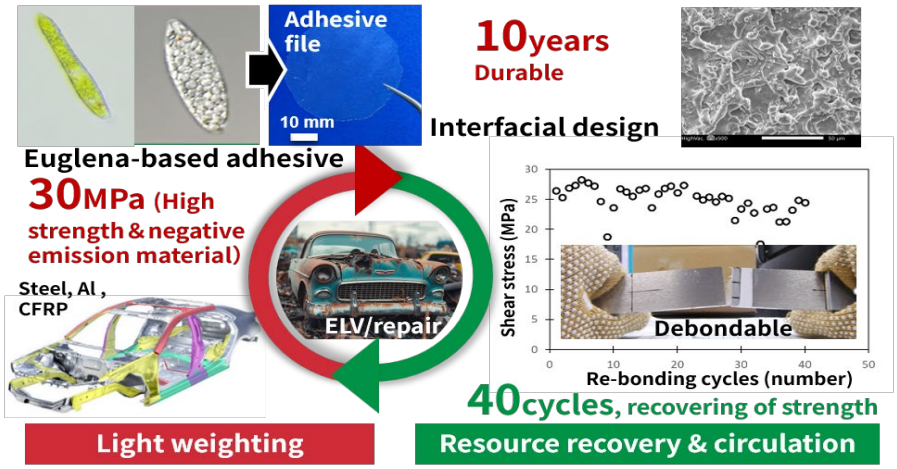


Fig. 1: Debondable performance of Euglena based adhesive

TBA



University of Braunschweig / IFS; DE-Braunschweig
TBA

Abstract:
Coming soon

Pros & Cons of Low-Pressure and Atmospheric-Pressure Plasma Pre-treatments for Adhesive Bonding

Plasmatreat; DE-Steinhagen
Klaus Kresser



Abstract:
This presentation provides a comparative overview of low-pressure plasma and atmospheric-pressure plasma technologies used for surface preparation prior to adhesive bonding. Both technologies improve adhesion by removing contaminants, increasing surface energy, and introducing functional groups that enhance wetting and bonding performance. In addition to surface activation and cleaning, plasma processes can be used for etching and the deposition of functional coatings.

Low-pressure plasma operates in a vacuum environment and offers highly uniform treatment of complex three-dimensional geometries. The technology provides access to a broad range of process gases and chemical precursors, enabling advanced surface modification and thin-film deposition. It is particularly effective for demanding applications involving fluoropolymers such as PTFE, FEP, and PFA, as well as for specialized coatings with hydrophobic, oleophobic, biocompatible, or anti-corrosion properties. However, vacuum operation requires additional equipment, longer processing cycles due to pump-down and venting stages, and higher capital investment.

Atmospheric-pressure plasma operates directly under ambient conditions and is ideally suited for high-speed inline manufacturing processes. It delivers excellent cleaning and activation performance without the need for vacuum chambers, resulting in shorter cycle times and easier integration into automated production lines. The technology is particularly attractive for large-scale industrial applications due to its operational efficiency and lower process complexity. Its limitations include more localized treatment areas and reduced suitability for certain fluorinated materials and highly specialized coating chemistries.

The selection of the optimal plasma technology depends on factors such as material compatibility, component geometry, production volume, cycle-time requirements, and the desired surface functionality. While atmospheric plasma is often the preferred solution for cost-effective, continuous production, low-pressure plasma provides significant advantages for complex substrates, advanced coating applications, and challenging materials. Both technologies represent environmentally friendly alternatives to conventional chemical surface pretreatments and contribute significantly to the reliability and performance of modern adhesive bonding processes.

From Lap Shear to Lifecycle: A Data Foundation for AI-Assisted Adhesive Reformulation

Uncountable; US-San Francisco
Fátima Costa



Abstract:
Lightweighting, battery and e-mobility assembly, electronics and bio-based raw materials push adhesive formulators to reformulate faster, while restricted-substance lists grow. Yet adhesive performance depends on more than the recipe. Mix ratio, order of addition, cure temperature and time, bond line thickness and substrate preparation move lap shear, T-peel, tack and open time as much as the choice of resin, tackifier or filler. In most adhesives R&D groups, these process variables sit in notebooks and free-text comments, formulations sit in spreadsheets, and test and aging results sit in a legacy LIMS. When a raw material is restricted, a supplier changes a grade, or a customer asks for a bio-based alternative, teams cannot see which past trials, including the failed ones, already answer the question. Machine learning trained on recipe data alone then misses the process effects that often decide the bond.

This paper presents a practical method to make adhesive development data usable for machine learning and for regulatory and lifecycle questions. With a worked example on a two-component structural epoxy, we show: (1) a data model that records process steps, cure profile and substrate preparation as structured, unit-normalised fields linked to each formulation, raw material lot and test method; (2) how a planned design of experiments, combined with a model trained on historical trials, separates the effects of cure profile, mix ratio and resin backbone on lap shear and T-peel; and (3) how the same records support the substitution of a restricted substance and trace a formulation from a 200 g lab batch to production scale-up. We also discuss where AI adds value today, such as ranking candidate formulations and answering natural-language questions over past results, and where it does not yet, such as extrapolation outside the tested design space or replacement of physical durability testing. In each step, the formulator reviews and approves the model's suggestions before a trial runs.

Key takeaways

1. Record the process as data. Cure profile, mix ratio, order of addition and substrate preparation belong in structured fields next to the recipe.
2. Failed trials are training data. A model learns the limits of the design space only from the trials that missed the target.
3. Regulatory readiness is a data problem. Substitution of a restricted substance is fast only when each formulation links to its raw materials and test history.
4. The product lifecycle starts in the lab. A bench record that carries lot, method and conditions makes scale-up and customer change requests traceable.
5. Keep the chemist in the loop. Use AI to rank and retrieve and confirm each suggestion with physical testing.
