

**Programme**

# IAA 2022

## 2<sup>ND</sup> INTERNATIONAL CONFERENCE ON INDUSTRIAL APPLICATIONS OF ADHESIVES 2022

Carvoeiro, Algarve - Portugal  
3-4 March 2022

*[fe.up.pt/iaa2022](http://fe.up.pt/iaa2022)*

## PROGRAMME OF IAA2022

Author underlined → presenting author

Thursday 3 March 2022	
8:40	<b>IAA 2022 Opening (Room Porches &amp; Lagoa)</b>
<b>Session 1 – Adhesion and Surface treatments (Chair: JA Poulis and F Arán-Ais)</b>	
<b>Room Porches &amp; Lagoa</b>	
9:00	Sustainable laser pre-treatment for optimized bonding results (IAA22_1) <u>L Draack</u> (Clean Lasersysteme GmbH, Germany)
9:20	Polymer composites materials : Towards functional interfaces (IAA22_42) <u>D Ruch</u> (Luxembourg Institute of Science and Technology, Luxembourg), J Bardon, G Mertz, C Mugemana, F Addiego, C Fuentes, A Laachachi
9:40	Optimization of industrial adhesive bonding processes via Artificial Intelligence (IAA22_9) <u>J Jordens</u> (Flanders Make, Belgium), B Van Doninck, I Couckuyt, N Loka, A Morales Hernandez, I Van Nieuwenhuysse, M Witters
10:00	Surface pre-treatment and analyses of Titanium and CFRP for adhesive bonding of bi-material joints (IAA22_17) <u>JA Poulis</u> (Delft University of Technology, The Netherlands), W Wang, S Teixeira De Freitas, D Zarouchas
10:20	A method to evaluate the interfacial adhesion between polymer and metal (IAA22_29) A Frick, <u>M Rettenberger</u> (Aalen University, Germany), M Spadaro
10:40-11:00	<b>COFFEE BREAK</b>
<b>Session 2 – Adhesive development and properties I (Chair: K Kamiyama and J Que)</b>	
<b>Room Porches &amp; Lagoa</b>	
11:00	Temperature dependence of scarf joint bonded with SGA (IAA22_7) <u>K Kamiyama</u> (Mitsubishi Electric Corporation, Japan), M Mikuni, T Matsumoto, S Matsuda, H Kishi
11:20	Industrial feasibility of structural strengthening by application of highly toughened adhesives and composite laminates (IAA22_4) <u>C Di Fratta</u> (Sika Services AG, Switzerland), S Popovic, P Jousset
11:40	Methods for shrinkage measurement considering the relaxation behaviour of curing structural adhesives (IAA22_24) <u>J Wirries</u> (Fraunhofer IFAM, Germany), H Fricke, M Ruetters
12:00	Hyperelastic behaviour of adhesives and its effect on bonded joints (IAA22_26) IJS Arce, LDC Ramalho, DC Gonçalves, <u>RDSG Campilho</u> (ISEP, Portugal), J Belinha
12:20	INDAR Primer: a new solution for easy dismantling of bonded assemblies (IAA22_34) <u>M Olive</u> (RESCOLL, France), R Szymanski
12:40	Determination of the fracture envelopes of structural adhesives as a function of strain rate (IAA22_46) <u>PDP Nunes</u> (INEGI, Portugal), EAS Marques, A Akhavan, RJC Carbas, LFM da Silva
13:00-14:00	<b>LUNCH BREAK</b>
<b>Session 3 – Adhesive development and properties II (Chair: C Sato and M Olive)</b>	
<b>Room Porches &amp; Lagoa</b>	
14:00	Inverse estimation of $G_{IC}$ for adhesive joints by impact wedge peel tests (IAA22_53) S Kuramoto, T Sugaya, Y Sekiguchi, <u>C Sato</u> (Tokyo Institute of Technology, Japan)
14:20	Thermal conductive adhesive for battery bonding (IAA22_55) <u>G Bumbu</u> (DuPont, Switzerland), S Schmatloch, I Caderas, A Lutz

14:40	Preliminary design of an experimental tool for direct generation of cohesive zone law data of structural adhesives ( <b>IAA22_48</b> ) <u>DS Correia</u> (INEGI, Portugal), EAS Marques, RJC Carbas, LFM da Silva
15:00	Evaluation of damage parameter in the adhesive material ( <b>IAA22_49</b> ) <u>M Lamberti</u> (Aix-Marseille University, France), A Maurel-Pantel, F Lebon
15:20	Bio-based tannin and lignin adhesives for bonding of wood ( <b>IAA22_37</b> ) <u>M Šemek</u> (University of Ljubljana, Slovenia), J Saražin, A Pizzi
15:40	The effect of the addition of waste granite powder on the mechanical properties of cement-lime plasters ( <b>IAA22_2</b> ) M Rudner, <u>A Chajec</u> (Wroclaw University of Science and Technology, Poland), Ł Sadowski
16:00-16:20	<b>COFFEE BREAK</b>
<b>Session 4 – Quality control (RD Adams and N Cuvillier)</b>	
<b>Room Porches &amp; Lagoa</b>	
16:20	Quality assurance in adhesive bonding ( <b>IAA22_15</b> ) <u>RD Adams</u> (University of Bristol, UK)
16:40	Evaluation of the adhesion level in aged composite-composite structures using ultrasonic waves ( <b>IAA22_5</b> ) T Agra, <u>D Leduc</u> (Université Le Havre Normandie, France), M Ech-Cherif El-Kettani, M Predoi
17:00	Laser Shock for NDT of composites materials and bonded joints: recent advances ( <b>IAA22_6</b> ) <u>N Cuvillier</u> (Safran Tech, France), M Ducouso, MS Bertrand, T Bergara, L Videau, L Berthe
17:20	Deep learning architecture for the detection, labeling and online measurement of surface treatment defects by laser ( <b>IAA22_16</b> ) <u>B Martin</u> (IRT Saint-Exupéry, France), S Kirchner, J Lecomte, J-B Duga, L Ferres, M Peron, N Cuvillier
17:40	Feature extraction for defect detection utilizing Lamb waves and supervised machine learning algorithms ( <b>IAA22_65</b> ) <u>GMF Ramalho</u> (University of Porto, Portugal), VFF Loreiro, AM Lopes, LFM da Silva
18:00	Performance comparison of different Artificial Neural Networks for void detection in adhesive joints ( <b>IAA22_51</b> ) <u>AFG Tenreiro</u> (INEGI, Portugal), AM Lopes, MR Barbosa, LFM da Silva
19:00	<b>Poster session and RECEPTION</b>
<b>Adhesion and Surface treatments</b>	
Poster 1	Study of adhesive and adhesion interface structure by spectroscopic analysis ( <b>IAA22_64</b> ) <u>Y Takahashi</u> (Kobe Steel, Japan), S Yamamoto, Q Yuan, T Itoh
<b>Adhesive development and properties</b>	
Poster 2	Influence of zeolite on the silicone pressure-sensitive adhesives properties ( <b>IAA22_59</b> ) <u>K Mozelewska</u> (West Pomeranian University of Technology in Szczecin, Poland), AK Antosik, K Gziut
Poster 3	Development and characterization of silicone pressure-sensitive adhesives modified sepiolite for self-adhesive tape applications ( <b>IAA22_60</b> ) <u>AK Antosik</u> (West Pomeranian University of Technology in Szczecin, Poland), K Gziut, M Musik, P Miądlicki, M Weisbrodt
<b>Joint design</b>	
Poster 4	Mechanical properties comparison of woven hybrid metallic fabric with different thicknesses ( <b>IAA22_33</b> ) <u>Al Kaya</u> (Adiyaman University, Turkey), KE Engin, S Cital
Poster 5	Toughened single lap joints with CFRP adherends using thin-ply laminate ( <b>IAA22_54</b> ) <u>F Ramezani</u> (INEGI, Portugal), RJC Carbas, EAS Marques, LFM da Silva
Poster 6	The joint strength of SLJs reinforced with hybrid composite adherends ( <b>IAA22_11</b> ) <u>RJC Carbas</u> (INEGI, Portugal), F Malbizar, EAS Marques, LFM da Silva
<b>Durability</b>	
Poster 7	Tensile fatigue life assessment of bonded joints subjected to cyclic ageing: Effects of ageing frequency and fatigue stress level ( <b>IAA22_21</b> ) <u>JA da Costa</u> (University of Porto, Portugal), A Akhavan-Safar, RJC Carbas, EAS Marques, LFM da Silva

Poster 8	Ultrasound method for local adhesion level in bonded composite structure placed in hostile environment <b>(IAA22_63)</b>	T Agra, D Leduc, <u>M Ech-Cherif El-Kettani</u> (Université Le Havre Normandie, France), M Predoi
<b>Various industries</b>		
Poster 9	The effect of the addition of granite powder on the subsurface properties of cementitious floors <b>(IAA22_3)</b>	M Moj, <u>A Chajec</u> (Wroclaw University of Science and Technology, Poland), Ł Sadowski
Poster 10	Mechanical properties of epoxy adhesives modified with waste quartz powders <b>(IAA22_40)</b>	<u>A Chowaniec</u> (Wroclaw University of Science and Technology, Poland), S Czarnecki, Ł Sadowski
Poster 11	Optimisation of an induction cure process for the manufacturing of adhesively bonded milling tools <b>(IAA22_22)</b>	<u>PN Gomes</u> (INEGI, Portugal), DS Correia, EAS Marques, RJC Carbas, PJC das Neves, LFM da Silva
Poster 12	Evaluation of structural joining techniques used in the marine industry <b>(IAA22_27)</b>	<u>F Delzendehrooy</u> (INEGI, Portugal), A Akhavan-Safar, AQ Barbosa, RJC Carbas, EAS Marques, LFM da Silva
Poster 13	Influence of surfactant contamination on the mechanical properties of a silicone adhesive and an adhesive joint with aluminum substrates <b>(IAA22_10)</b>	<u>CSP Borges</u> (INEGI, Portugal), R Brandão, A Akhavan-Safar, EAS Marques, RJC Carbas, C Ueffing, P Weissgraeber, LFM da Silva
Poster 14	An innovative way to repair damaged concrete floors using epoxy adhesives <b>(IAA22_61)</b>	<u>Ł Kampa</u> (Wroclaw University of Science and Technology, Poland), Ł Sadowski
Poster 15	Stencil printing of adhesive-based fuel cell sealings: the influence of the stencil mesh on the separation step <b>(IAA22_62)</b>	<u>El Indicatti</u> (Robert Bosch GmbH, Germany), M Rädler, F Günter, E Stammen, K Dilger

## FRIDAY 4 MARCH 2022

### Session 5 – Joint design (Chair: LFM da Silva and S Howe)

#### Room Porches & Lagoa

8:40	Simulation of micro cracks introduced by environmental stress in the context of adhesive bonding <b>(IAA22_56)</b> <u>H Deutges</u> (Technische Universität Braunschweig, Germany), MA Athar, E Stammen, K Dilger, S Hartwig
9:00	Evaluation of the mechanical capacities of multimaterial thermoplastic/steel joints <b>(IAA22_18)</b> <u>T Fkyerat</u> (ENSTA Bretagne, France), F Le Poulain, R Créac'hcadec
9:20	Adhesive characterization, joint testing and numerical modelling of impact resistant bonded joints for automotive applications <b>(IAA22_8)</b> <u>EAS Marques</u> (INEGI, Portugal), PDP Nunes, A Akhavan-Safar, CSP Borges, RJC Carbas, LFM da Silva
9:40	Static strength prediction of curved composite joints under internal pressure <b>(IAA22_25)</b> PAR Ferreira, <u>RDSG Campilho</u> (ISEP, Portugal), IJ Sánchez-Arce, DC Gonçalves
10:00	Evaluating the influence of short fiber reinforced thermoplastic composites produced by injection molding on the stress distribution in an adhesively bonded joint using a multi-scale numerical modeling approach <b>(IAA22_28)</b> <u>S Verstraete</u> (KU Leuven, Belgium), F Desplentere, S Debruyne
10:20	Investigation of mechanical properties of woven hybrid metallic fabric <b>(IAA22_32)</b> <u>KE Engin</u> (Adiyaman University, Turkey), AI Kaya, S Citil

#### 10:40-11:00 COFFEE BREAK

### Session 6 – Durability (Chair: S Böhm and RDSG Campilho)

#### Room Porches & Lagoa

11:00	Towards the development of a unified fatigue life prediction methodology: the influence of substrate material <b>(IAA22_12)</b> <u>FC Sousa</u> (University of Porto, Portugal), A Akhavan-Safar, LFM da Silva
11:20	Ageing-resistant bonding on stainless steels by laser treatment followed by flame silicization <b>(IAA22_19)</b> S Mechtold, M Kahlmeyer, <u>S Böhm</u> (University of Kassel, Germany)

11:40	Relationship between infrared spectra and mechanical properties of cured adhesives immersed in water <b>(IAA22_30)</b> <u>K Shimamoto</u> (National Institute of Advanced Industrial Science and Technology, Japan), H Akiyama
12:00	Durability of adhesive interfaces in dissimilar joints of aluminum and carbon fiber reinforced composites <b>(IAA22_41)</b> <u>S Horiuchi</u> (National Institute of Advanced Industrial Science and Technology, Japan), L Lyu, N Terasaki
12:20	Temperature influence on the load-bearing and failure behaviour of structural adhesive joints under quasi-static loading <b>(IAA22_47)</b> <u>M Striewe</u> (Paderborn University, Germany), G Meschut, L Schmelzle, J Mergheim
12:40	Fatigue crack growth behavior of polyurethane adhesive under mode I loading <b>(IAA22_50)</b> <u>K Naito</u> (National Institute for Materials Science, Japan)
13:00-14:00	<b>LUNCH BREAK</b>
<b>Session 7 – Automotive industry (Chair: H Fricke and F Gilbert)</b>	
<b>Room Porches &amp; Lagoa</b>	
14:00	New bonding solutions for the construction of battery pack and electric vehicles <b>(IAA22_58)</b> <u>J Que</u> (Sika Technology AG, Switzerland), U Rheinegger, N Morel
14:20	Characterization of the mechanical behavior of an adhesive subjected to different heating processes with automotive application <b>(IAA22_13)</b> <u>LM da Silva</u> (Stellantis, France), C Cellard, L Sohier, O Ponte-Felgueiras, R Créac'hcadec
14:40	Replacing welding with adhesive bonding: An industrial case study <b>(IAA22_14)</b> <u>A Akhavan-Safar</u> (INEGI, Portugal), J Antelo, RJC Carbas, EAS Marques, LFM da Silva, R Goyal, N Cuvillier, I Maus, Y Takahashi, J Sherwood
15:00	Adhesive bonding technology for the production of energy storage systems for electric vehicles <b>(IAA22_23)</b> <u>H Fricke</u> (Fraunhofer IFAM, Germany), J Wirries, M Ruetters
15:20	Static design of a multi-material bonded engine cradle <b>(IAA22_35)</b> <u>A Benali</u> (ENSTA Bretagne, France), C Cellard, L Sohier, A Moretti, R Créac'hcadec
15:40	Analysis of adhesive bonding joint properties of a hybrid beam <b>(IAA22_36)</b> <u>M Hejman</u> (Fatigue Analysis RI s.r.o., Czech Republic), J Václavík
16:00-16:20	<b>COFFEE BREAK</b>
<b>Session 8 – Various industries (Chair: K Dilger and A Akhavan-Safar)</b>	
<b>Room Porches &amp; Lagoa</b>	
16:20	Mechanoluminescent study of local fracture toughness on aircraft CFRP-epoxy adhesive sheet assembly in DCB and ENF test <b>(IAA22_45)</b> <u>N Terasaki</u> (National Institute of Advanced Industrial Science and Technology, Japan), K Takagi
16:40	Directional dependence of the mechanical properties of structural adhesive joints with curing-induced pre-deformations <b>(IAA22_57)</b> <u>F Beule</u> (Paderborn University, Germany), D Teutenberg, G Meschut
17:00	Automatic robot toolpath calculation for atmospheric plasma and gluing process in footwear industry <b>(IAA22_43)</b> <u>JF Gómez-Hernández</u> (INESCOP, Spain), JM Gutiérrez-Hernández, JL Sanchez-Romero, A Jimeno-Morenilla
17:20	How to reduce the environmental footprint of the footwear bonding process <b>(IAA22_44)</b> <u>F Arán-Ais</u> (INESCOP, Spain), C Ruzafa-Silvestre, MP Carbonell-Blasco, CB Mateu-Romero, E Orgilés-Calpena
17:40	Potential of adhesive bonding technology for joining thermo-mechanically modified wood composites in automotive application <b>(IAA22_31)</b> <u>M Burnett</u> (University of Kassel, Germany), M Kahlmeyer, A Winke, S Böhm
18:00	Waste granite powders as fillers in epoxy floors: a case study in a car repair workshop <b>(IAA22_39)</b> <u>A Chowaniec</u> (Wroclaw University of Science and Technology, Poland), S Czarniecki, Ł Sadowski
20:00	<b>IAA2022 BANQUET (Hotel Tivoli Carvoeiro)</b>