ATIPIC Sponsors

The Board of **ATIPIC** invites you to attend its first technical activity 2022 on February 8th, 2022 in the Hotel Martin'S Red**** at 1480 Tubize, where 6 lectures will be hold on the theme:

"Innovative Routes for Paint Formulations"

The ATIPIC members are also kindly invited to the **2022 General Assembly** that will take place at the end of the morning session, before the lunch.

Venue: **Martin'S Red, room RUSSIA A/B**
Rue de Bruxelles, 484 - B 1480 Tubize
Tel: +32/2.634.11.11
www.martinshotels.com

PROGRAM

9:30 - Welcome / Registration (coffee/tea) in the room Russia B

10:00 Opening by Jacques Warnon

10:05 **"Protection of Fiber Cement Board with Silicone and Acrylics"**
Jean-Paul Lecomte, DOW

10:40 **"Tall Oil Fatty Acid as 100% bio-based Building Block for Alkyd Emulsions"**
Michael Bulanov, KRATON

11:15 **"Self-healing Polyurethane Coating with slippery Properties"**
Tangi Sénéchal, MATERIA NOVA

12:00 **General Assembly ATIPIC (only for ATIPIC members)**

12:45 **Lunch**

14:05 **"Development of solid Electrolyte Cell by spraying."**
Marijke Jacobs, VITO

14:40 **"Innovative Routes for the Preparation of Water-borne Acrylic Polyols for 2K PU"**
Nathalie Havaux, HEXION

15:15 **"Valida: Natural cellulose as source of inspiration in waterborne coatings formulations"**
Gabriel Ferrante, SAPPI

15:50 Friendly drinks in the "Sport Bar" of the Hotel

ABSTRACTS

10:05 "Protection of Fiber Cement Board with Silicone and Acrylics"
Jean-Paul Lecomte, DOW

Protecting Fibre Reinforced Cement (FRC) boards against water absorption is key to prevent water-induced physical change or freeze thaw degradation, improve the performance of the board and the board manufacturers' customer satisfaction. Surface protection by post treatment water repellent is a known method to protect cement boards which is widely practiced for many years. New innovative silicone chemistry opened the possibility of integral water repellent (IWR), to protect cement boards in the bulk, without impacting other beneficial properties of the board. This technology is proven since several years at industrial scale. New innovative, easy to use, water dilutable integral water repellent has been demonstrated as well.
This paper will explore the benefit of combining silicone and acrylic chemistry to protect fiber cement boards. Silicone impregnation can be formulated with film forming acrylic polymer dispersion for achieving better protection of cement boards, especially against efflorescence. The benefit of the combined technology for the protection of board edges, which exceeds in its combined formulation the benefits of both individual chemistries, will be shared as well.

10:40 "Tall Oil Fatty Acid as 100% bio-based Building Block for Alkyd Emulsions"
Michael Bulanov, KRATON

Many waterborne coatings still have a high degree of fossil fuel based materials inside. The usage of Tall Oil Fatty Acid (TOFA) as renewable building block derived from Crude Tall Oil refining allows a drastic reduction of fossil fuel dependency.
TOFA's main use today is in the production of solventborne alkyds. This paper will showcase the impact of TOFA as 100% bio-based material in the development of alkyd emulsions. As a low carbon footprint building block, it minimizes the fossil fuel content, while maintaining or even improving the properties of the final alkyd emulsion paint. The first part of this paper will explain how a stable alkyd emulsion is produced in the lab and which parameters are critical during the production. The second part of the presentation will compare different fatty acids, their composition and impact on paint properties such as hardness, gloss and gloss retention, yellowing and drying. Finally the sustainability elements and extreme low carbon footprint aspect of TOFA is explained.

11:15 "Self-healing Polyurethane Coating with slippery Properties"
Tangi Sénéchal, MATERIA NOVA

The main objectives of CLEANSKY STELLAR projects are the development of efficient and durable anticontamination coatings designed following a deep understanding of the insect residues properties, in this frame Materia Nova aim to develop a coating with a combination of slippery and self-healing properties. Scientists have been actively focusing on the development of polymers able to
"feel" a damage and provide healing during their use in various applications. This property has been combined with slippery agents to provide self-healing slippery coatings. The coatings are based on the use of spontaneous self-repairing polymeric resins. Previous works have shown the potential use of this type of concept for coating application. A special emphasis is made on the design of stiff and remandable polymeric resins that can repair under mild conditions using ambient humidity as external stimuli. Self-healing PU (2K) has been specifically formulated with the addition of agents to provide durable slippery effect.

14:05 "Development of solid Electrolyte Cell by spraying."

Marijke Jacobs, VITO

This study investigates the innovative use of a deposition technique, spray coating, for the fabrication of optimal thicknesses of solid oxide cell (SOC) layers on a range of SOC-compatible materials. The work has been carried out as part of the European KEROGREEN project that aims to utilise CO2 into key value-added products, such as sustainable aircraft kerosene produced from water and air and powered by renewable electricity. An important step in this production process is oxygen separation at higher operating temperatures after CO2 dissociation (plasmolysis) to create a CO stream for Fischer-Tropsch downstream synthesis. The oxygen separator design is based on a solid oxide electrolyzer cell (SOEC). It consists of three main components: a fuel electrode (here referred to as the CO2 electrode or plasma electrode), an electrolyte and an oxygen electrode. In this work, the electrode layers were applied by spray coating on yttria-stabilized zirconia (YSZ) planar substrates, which served as the electrolyte layers. For the electrodes, the most promising LaSr-based perovskite materials produced by Cerpotech were selected based on their electrical conductivity and ability to suppress the CO to CO2 back reaction at the CO2 (plasma) splitting side. The coating parameters such as atomization pressure and coating speed were optimized to obtain uniform coatings and to control the thickness. The suspension formulation was adjusted to improve the adhesion and the quality of the coating. Profilometry and microscopy were used to determine the coating thickness and porosity. Furthermore, electrochemical impedance spectroscopy was carried out on the electrodes under investigation to give an indication of the effect of their microstructure on electrochemical performance. Several YSZ discs were successfully coated with an oxygen and CO2 electrode layer and then thermally treated up to 1100 °C for 2h. The coatings show a good adhesion to the YSZ discs and look rather uniform. Both electrode layers are porous and about 10 to 15 µm thick with a porosity of circa 45 %. SEM images of the cross section of the produced electrode layers are given in Fig. 1. Prior to the electrodes, thin and dense interlayers were spray coated to prevent reactions between the electrolyte and the electrodes. These interlayers reduced the total electrodes impedance of the SOEC to about 8 Ohm determined at 800 °C in dry air, compared to the impedance of the cell without interlayers

14:40 "Innovative Routes for the Preparation of Water-borne Acrylic Polyols for 2K PU"

Nathalie Havaux, HEXION

New regulations lead to a strongly increased demand for waterborne protective topcoats. However, matching the performance of solventborne 2K polyurethanes with low VOC waterborne systems remains a challenge for resin and paint producers. The two options to achieve the lowest possible VOC coatings, primary or secondary dispersions, present technical challenges in production.

The emulsion polymerisation process to produce primary dispersions often faces problems of water-phase homopolymerisation of the hydroxyl bearing monomers. This causes poor stability of the emulsions and insufficient crosslinking of the final coatings. The removal of solvents to produce solvent-free polyols to be dispersed in water for secondary dispersions is also technically challenging.

The presentation will cover two inventive routes using glycidyl neodecanoate to either facilitate emulsion polymerization or to simplify the secondary dispersion production processes, rendering both easier and more robust. In both cases, improved performance of the derived topcoat is observed.

Additional note: For emulsion polymerisation the presentation will show how a partial replacement of hydroxyethyl methacrylate, HEMA, by a much less hydrophilic OH functional monomer (the acrylic acid adduct of glycidyl neodecanoate), leads to a more

homogeneous distribution of the hydroxyl groups on the polymer chains and therefore to an optimized crosslinking density of the final coatings.
For secondary dispersions, the replacement of the solvent used during resins synthesis by a reactive diluent (glycidyl neodecanoate) allows skipping the solvent stripping step in the process. In addition to cost savings, the resulting polymers show improved performance.

15:15 - **"Valida: Natural cellulose as source of inspiration in waterborne coatings formulations"**
Gabriel Ferrante, SAPPI

Cellulose is the most abundant organic polymer on Earth and the main component of all plants. It makes sense to harness this resource and unlock its potential as a biomaterial. One development centered around this is Valida.
Valida is fibrillated cellulose manufactured by Sappi, a 100% natural, biodegradable and sustainable material produced by mechanically processing wood derived cellulose fibres down to their smallest components, resulting in innovative material properties.
These properties include excellent stabilizing potential, rheology modification and robustness. Valida's unique rheology profile – high viscosity at rest, highly shear thinning and sprayable – make it a suitable material for many applications, including waterborne Paints and Coatings systems. In Paints and Coatings, fibrillated cellulose acts as multifunctional stabiliser mimicking synthetic solutions while improving the sustainability, reducing VOC content and carbon footprint. At the same time, Valida effectively enhances the rheology of the wet paint and provides reinforcement to the dry paint. The high viscosity at rest results in stable formulations with improved in-can stabilities, enhanced pigments stabilisation and no syneresis. Furthermore, the thixotropic nature significantly enhances the antisagging of the paint, preventing dripping. In the dry paint, Valida solves the mudcracking issue, providing also higher resistance to household chemicals and enhanced contrast ratio/hiding power.
We will cover how Fibrillated Cellulose is produced and the difference to other conventional celluloses on the market before moving into the most common features Valida will impart to formulations through case studies. We will finish with some considerations when using Valida. To unlock the functionalities of Valida in formulations, proper activation and addition is necessary. Valida also synergizes with conventional materials, boosting their effectiveness.

REGISTRATION FEES (Lunch included)

ATIPIC/AFTPVA/NVVT member :	80,00 EUR (VAT included)
Retired ATIPIC/AFTPVA/NVVT member :	50,00 EUR (VAT included)
Non ATIPIC/AFTPVA/NVVT member :	160,00 EUR (VAT included)
Retired non ATIPIC/AFTPVA/NVVT member :	80,00 EUR (VAT included)
Student:	Free
Speaker:	Free

REGISTRATION & CANCELLING

Registrations are to be made at the latest **by February 1st, 2022** and exclusively with this link:

Registration

The payment has to be made preferable by transfer on the ATIPIC banking account number BE22 2710 6182 9347 at the latest by February 1st, 2022 or by cash or mobile at the entrance of the conference room.
Please mention your first name and last name as communication on your bank transfer.

To cancel your registration please contact by mail info@atipic.be at the latest by February 4th, 2022. Any canceling after this date will induce the sending of an invoice for the mentioned amount on the fill-in registration form.

The ATIPIC management is looking forward to meet you on February 8th, 2022.

Next ATIPIC events in 2022

Mars 31st: Seminar (all day) NVVT/ATIPIC at PRINCEVILLE (Breda) V. d. Valk
June 15th: Enterprise visit at Centexbel (Gent)
October 12th: Technical study afternoon ATIPIC/BPG at LEUVEN Brabanthal (still under construction)
December 1st : Technical study afternoon ATIPIC at LEUVEN Brabanthal (still under construction)

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ATIPIC : The Belgian Association of Technicians from the Paint and Related Industries

ATIPIC : Association des Techniciens de l'Industrie des Peintures et des Industries Connexes de Belgique

ATIPIC : Belgische Vereniging der Technici van de Verf- en Aanverwante Industrieën

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