



ATIPIIC and VOM organize a study afternoon during Eurofinish + Materials 2019 on Wednesday May 15th in the Brabant Hal , Brabantlaan 1, 3001 Leuven
You are cordially invited to attend this technical afternoon focused on

"Metal Protection"

Program

- 13:30 - Welcome – Coffee/Tea
- 14:00 - Session opening by Dr. J. Warnon – President ATIPIIC.
- 14:05 - " **Water borne anticorrosion coatings - Some rules for success** "
Mrs. Laetitia Piquet - *Grolman Coatings Laboratory (FR)*
- 14:40 - " **Bonding and failure at Hybrid Interfaces** "
Prof. Tom Hauffmann - *Department of Materials and Chemistry VUB (BE)*
- 15:15 - Coffee/Tea break
- 15:30 - " **Real-time optics help understanding electrochemical signals in corrosion and coating studies** "
Dr. Santiago J. Garcia, Paul J. Denissen - *TuDelft (NL)*
- 16:05 - " **New very high solid acrylic polyol binders for low VOC direct-to-metal two components system** "
Dr. Gregory Delmas – *Arkema COR (FR)*
- 16:40 - Closure and drink.





Abstracts

1. " Water borne anticorrosion coatings - Some rules for success"

Mrs. Laetitia Piquet - *Grolman Coatings Laboratory (FR)*

This presentation opens with physicochemical basic principles of corrosion and explains how the different parameters are to be considered to avoid iron corrosion. Then formulation of a waterborne anticorrosion paint will be discussed : First considering electrochemistry, then the choice of raw materials will be developed with these chemistry bases and introducing short and quick tests to make an initial selection.

At last an example of developed paint formula and its properties will illustrate these previous statements.

Program :

- Electrochemistry basics applied to the corrosion.
- Pourbaix diagram
- Raw materials (selection and tests)
- Summary of main rules
- Example of paint formula

2. " Bonding and failure at Hybrid Interfaces"

Prof. Tom Hauffmann - *Department of Materials and Chemistry VUB (BE)*

Polymer/(hydr)oxide/metal systems play an important role in engineering. In aerospace, microelectronics, automotive, packaging and even biomedical industry engineering metals are adhesively bonded by a polymer adhesive. Next to adhesive joints, organic coatings are used in these industries and in construction in order to protect the underlying substrate against atmospheric influences. These adhesive joints and organic coatings often need to be able to withstand mechanical forces, changes in temperature and long-time exposure to corrosive environments. The interface between the organic layer and the oxide of these hybrid systems is very important as it determines largely the performance of the entire system.

In this talk, I will present innovative approaches to study interfacial interactions between metallic oxide layers and polymeric films in a non-destructive, in situ manner, in order to understand their adsorption and desorption behaviour.

3- "Real-time optics help understanding electrochemical signals in corrosion and coating studies

Dr. Santiago J.Garcia, Paul J. Denissen - *TuDelft (NL)*

An in-situ hyphenated optical and electrochemical method for the real-time study of corrosion, corrosion inhibitors and coatings has been developed by our team. During testing, optical images of the exposed surface with a submicron resolution are obtained in parallel to electrochemical testing (e.g. EIS, EN) with the help of a home-made 3D printed electrochemical cell. This method allowed obtaining both electrochemical and optical information with high time and spatial resolution. A data treatment protocol of the optical images was developed and a software implemented. This allowed the identification and quantification of corrosion-features related to intermetallic corrosion (e.g. trenching and meta-stable pitting) and co-operative corrosion (e.g. corrosion-rings, domes and surface-oxides) on a spatiotemporal scale, generally only observed through the use of ex-situ methods such as SEM. Several examples using this technique will be presented, including inhibitor selection and the evaluation of long-term protecting self-healing coatings. The use of in-situ optical analysis offering quantitative information is confirmed as a powerful tool to better interpret corrosion and degradation or monitor electrochemical-dependent surface phenomena.

4- " New very high solid acrylic polyol binders for low VOC direct-to-metal two components system "

Dr. Gregory Delmas – *Arkema COR (FR)*

Metals and their alloys are excellent materials with high strength and outstanding mechanical properties; they have been used for centuries. However, when they are exposed to a corrosive environment, surface of the steel structures will corrode and thus pose a potential danger to the whole steel structure and reduce its service life. The huge economic impact of the corrosion of metallic structures is a very important issue for all modern societies.

Today, the corrosion protection of metal is often obtained by multi-layer systems involving at least a primer and a top coat. These two coats are often based on different technologies implying solvent borne and water borne binders and formulations. It introduces complexity in the applications and drying equipment and processes.

Arkema has developed a new very high solid solvent borne acrylic technology that provides a very high protection to corrosion and a good adhesion on a large variety of substrates, under hard conditions. Due to these key features, this new Arkema's binder offers the advantage that it can be used as single Direct To Metal coating (DTM) and allows to have a paint formulation below 250g/l of volatile organic compound (VOC).

In the article, the new properties will be presented, as well as mechanisms and fundamentals, which have been used to develop the technology.



**ATIPIIC / VOM Technical Meeting
Wednesday May 15th, 2019
3001 Leuven**

REGISTRATION : ! Each participant has to register !

Next ATIPIIC events 2019

September 14th: ATIPIIC Relax (for members only)
September 26th: ATIPIIC / BPG Study Afternoon in Leuven
Topic: “When polymers meet coatings”

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www.atipic.be info@atipic.be
Avenue E.Grysonlaan,1 – 1070 Bruxelles-Brussel