

Request for industrial partners (24/10/2018)

Project title: **Plasma as green Solution for enhanced adhesion or functionalisation**

Acronym: PlasmaSol

Project ID	
Type	ICON research
Period	2 years
Starting date	October 2019
Total project budget (€)	TBD
Total man months	TBD
Subsidy percentage	According to SBO- and O&O regulations
Amount of subsidy (€)	TBD
Coordinator	TBD
Industrial partners	Current partners not disclosed at the moment

Project description

1. Context

To this day, the adhesion between two types of material or foiling process is often realized with solvent-based or water-based primers. These pose health and safety concerns, require long process time, are energy intensive and often the quality control remains difficult. This quality control is important if a guaranteed adhesion for 10 years in extreme conditions (e.g. outside exhibition and weathering) is intended. To enhance the foiling process of polymers or polymer to metal interface, new innovations in plasma technology need to be investigated.

The goal is to use an atmospheric plasma technology focused on depositing a functional layer in a homogeneous way, both in thickness and quality of the film layer. The functionality of the layer is controlled by the type of precursor used, which can be any type of liquid. Some examples are (meth)acrylates, amines or organo-siloxanes, etc. The biggest advantage of such a technology is that the functional layer is irreversible bound to the surface that will be treated.

Within this project, the goal is to irreversible deposit reactive functional groups on the application material to participate in the curing reaction of the

PUR glues (e.g. -OH, -NH₂ or -N=C=O). This new method will be much more advantageous compared to the current state-of-the-art used (typically Corona), which only creates roughening or oxidation of the surface that will be treated.

Next to possibly application in polymers e.g. PVC profiles and foils, other substrates could be investigated with this plasma technology e.g. wood, metal & textile materials. Further research in the precursor used with this plasma technology could also lead to broader and interesting functional properties and applications with e.g. antimicrobial behaviour, hydrophobicity (fluor replacement) or flame retardancy.

To achieve these goals a fundamental knowledge of this atmospheric plasma technology will be required both of the plasma and precursor chemistry, characterization of the treated surfaces and testing of the adhesion properties.

2. Research Target

The present research project aims to provide a green solution for adhesion applications with atmospheric plasma technology , this project envisions:

1. Proof of principle
2. Screening of the precursors and developing the formulation
3. Optimisation of the plasma proces - labscale
 - a. Characterisation of the treated surface
 - b. Testing of the adhesion properties
4. Application and testing in an industrial environment

3. Request

To complete the consortium, Catalisti is searching for additional industrial partners (NOT active in the production of windows and/or door profiles) interested in using atmospheric plasma treatment for their applications. Atmospheric plasma treatment can be used for adhesive properties between polymer(s) (or metal, wood) substrates or providing unique functional properties (anti-microbial, flame retardancy, ...) to the surface.

Important notice: To be eligible to receive funding from Catalisti in Catalisti-supported projects, industrial partners must be (at least) project member of Catalisti. For more information on membership and membership fees, please visit our website: <http://catalisti.be/membership-2/>

How to reply to this request

Please send an **email** before **February 22th 2019**, 12:00 PM (noon) to wlibbrecht@catalisti.be, and **briefly describe your interest and potential contribution** to the project. Based on all offers, the current industrial partners will determine together with Catalisti which partners can join the consortium. After submission of your offer, you can be contacted by telephone to further elaborate your offer. The decision will be communicated the earliest on February 28th 2019. Please contact Wannes Libbrecht (wlibbrecht@catalisti.be; +32(0)499 31 56 04) for any further questions you might have related to this request.