

Master thesis opportunity

The *Influence of water retaining additives on the drying process of water borne paint* will be studied in an upcoming master project hosted by SP Food and Bioscience together with AkzoNobel. The project will be performed within the framework of SuMo Biomaterials. The master thesis position is now open for applications and interested candidates can apply for the position.

Project objectives

This project will systematically evaluate the drying process of paint via a classical and the alternative FRAP method, more specifically:

- Try to find correlation between the water mobility in the paint, measured by FRAP, and the drying time measured with paint application tests.
- Investigate the influence of different water retaining ingredients in the paint on the drying time.

Background

When applying water born paint at hot conditions and on water absorbing substrates result in too short drying time. The most significant negative effect is that the water loss is so rapid that the paint film begins to set and when one pass of the roller is overlapped with the previous one, it can result in color and textural differences, which affect the aesthetics of the paint. The painted surface will appear very non uniform in color or gloss. The problem is more severe for exterior paints, but the problem exists in interior applications as well.

We have developed a method to determine the drying time of paint on a porous surface. The preliminary results indicate that the loss of water into the substrate has a large influence on the drying speed. We have also seen indications that the drying time differ from one paint formulation to another.

In a previous study we have shown that a microscopy based technique, Fluorescence Recovery After Photobleaching, is a promising alternative method to study water mobility in paint and to quantify the drying time of paint.

The work will include

Literature study, Preparation of water borne paint in lab quantities, Evaluation of drying time on paint samples by application tests, FRAP measurements on paint samples, Evaluation and interpretation of results, and Writing of a report

The project will be carried out partly at the Institute SP Food and Bioscience in Göteborg, where the student will get introduced to the state-of-the-art microscopy set-up, and partly at Akzo Nobel in Stenungsund where the paint preparation and paint application testing will be done. The project will be connected to SuMo Biomaterials VINN Excellence centre: www.chalmers.se/sumo

Project Duration: 6 months, starting earliest September 2015

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