



Functional Materials Division

Naturally-Renewable-Biopolymer Coatings as an Environmental Solution

The outcome of the project is to build students' capability in designing coatings/thin films just by using green and sustainable biopolymers to solve the problem of metal corrosion and/or biofouling, beneficial to our environment.

In Sweden, corrosion costs amount to around SEK 100 billion per year (2008 monetary value). Nowadays, the commercial anticorrosion paints and varnishes contain chemicals that are toxic/neurotoxic and carcinogenic, such as epoxy or alkyd resins and lead based driers and VOCs, as well as have the risk of uncontrolled release of toxic anticorrosion pigment to the environment. To address the challenge, the goal of this project is to develop sustainable, low-cost, non-toxic and environment-friendly anticorrosive coatings on metal surfaces based on biopolymer, suitable for a circular economy.



The cost of corrosion & biofouling (↑)
The solution coming from biopolymer (↓)



This project will involve multidisciplinary knowledge and skills on mechanically polishing the metal surface, chemically fabricating the coating materials on substrate, physically characterizing the material properties using multiple instruments and electrochemically evaluating the anti-corrosion performance of the coatings.

The students will widen their vision on how material science can help on solving environmental problem. Many scientific instruments are equipped in Functional Materials Division, from basic spectrophotometers to advanced Scanning/Transmission Electron Microscopy, that students will have chance on using these tools to characterize the coatings and evaluate their performance.

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