



*We want you!*

YKI, Institute for Surface Chemistry

## Diploma work

### Novel bionic surface modification methods

#### Aim

Development of novel bionic surface modification methods based on adhesion promoters. The diploma work is a joint position at Division of Surface and Corrosion Science, Royal Institute of Technology (KTH), and YKI, Institute of Surface Chemistry.

#### Background

Surface engineering can be used to develop a wide range of functional properties, including physical, chemical, electrical, electronic, magnetic, mechanical, wear-resistant and corrosion-resistant properties at the required substrate surfaces. These techniques are used in a wide range of industries such as the automotive, aerospace, power, electronic, biomedical, textile, petroleum, petrochemical, chemical, steel, power, cement, machine tools, construction industries.

For surface functionalization surfaces often have to be pre-treated to increase their reactivity with for example etching. Simple non-etching dip-coating methods would prevent loss in mechanical strength caused by etching.

Bionics is learning from nature, i.e. the application of biological methods and systems found in nature to the study and design of engineering systems and modern technology.

This project will investigate the possibilities to develop methods of functionalizing surfaces inspired by the extraordinary adhesion ability of mussel feet protein.

The research program specifically aims at increasing the fundamental understanding of the adhesion properties and possibilities for functionalizing surfaces with molecules inspired by mussel feet protein. It will address scientific problems that have to be overcome in order to develop the general applicability of the concepts.

#### Work plan

Experiments will include adsorption, adhesion, surface analysis and advanced electrochemical measurements.

In addition to the experimental study, the diploma work will also consist of a literature survey, and writing of the diploma thesis. The project will start as soon as possible.

### Contact us with your questions and application

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## Welcome to contact us with your questions and application

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*YKI, Institute for Surface Chemistry is a world-leading industrial research institute with a focus on innovation transfer in applied surface chemistry. Our mission is to develop and transfer competence, solutions and new technologies to industrial sectors where surface chemistry is of importance. YKI is part of Sweden's leading re-search institute SP Technical Research Institute of Sweden.*