Group : Active organic surfaces
Project : **Advanced zwitterionic antifouling coatings for biosensor applications**
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Key-words
Nanotechnology, organic synthesis, surface chemistry, biofouling, antifouling, zwitterionic, biosensors

Introduction
Surfaces are used in a variety of biological applications, like biosensors or implants, and generally suffer from fouling by biological components. This biofouling can be diminished by coating a surface with a very thin, zwitterionic (doubly charged) organic antifouling layer.

During an internship within this project, the student will work on the synthesis and characterization (NMR, IR, GC-MS) of novel precursor molecules (Figure 2) for the preparation of zwitterionic surface coatings. The student will also learn to prepare different types of nanocoatings on various substrates. Characterization of these nanocoatings will be performed by contact angle measurements, infrared spectroscopy (IR) and X-ray photoelectron spectroscopy (XPS). Protein-repellence of the nanocoatings will be evaluated using fluorescence microscopy and label-free sensor platforms.

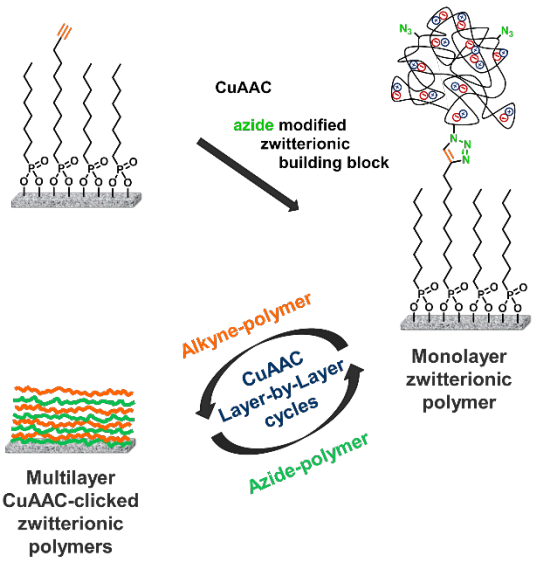

Figure 2. Layer-by-layer surface immobilization of zwitterionic polymers

Techniques to be used
Contact angle measurements, infrared spectroscopy (IR), X-ray photoelectron spectroscopy (XPS), fluorescence microscopy, nuclear magnetic resonance (NMR), gas chromatography–mass spectrometry (GC-MS) and label-free sensing platforms.

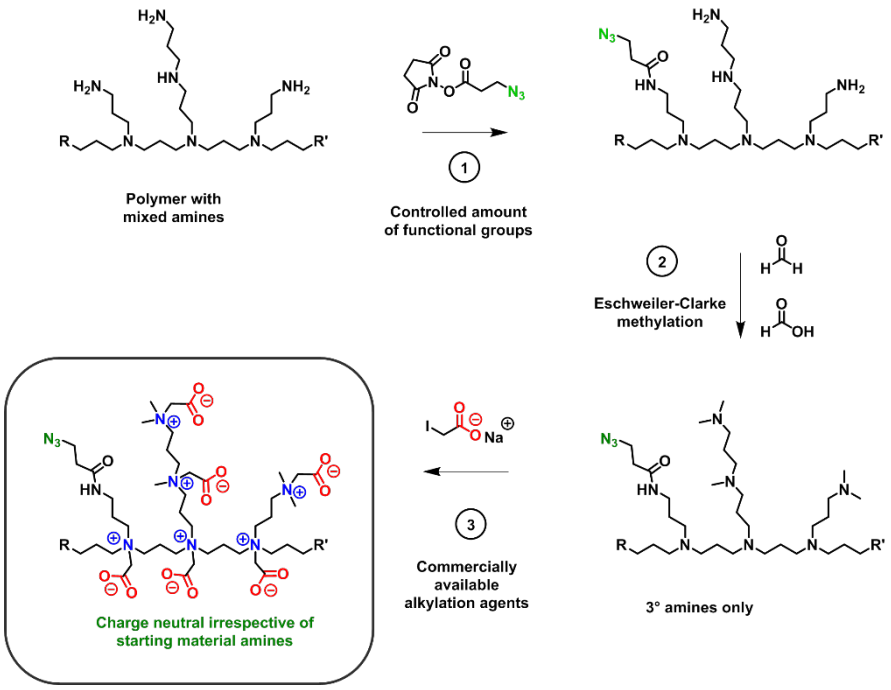

Figure 3. Example of a synthesis route for zwitterionic building blocks.

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