

# Zooma med en kemidoktorand – HT26

## Analytisk och organisk kemi

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| <b>A1</b> | <p><b>The lab that fits in your hand: science at the micro scale</b></p> <p>The future of science isn't locked in a lab. It is small enough to hold in your hand. Can you imagine detecting diseases with a piece of candy or testing water quality with a simple sheet of paper? In this talk, we will discover how scientists turn everyday objects into powerful tools to explore hidden environments and solve real-world problems. Through surprising examples from our own research at the university, we will learn how chemistry, biology, engineering, and technology work together to transform ordinary objects into clever scientific devices. By the end of the talk, we'll start noticing laboratories everywhere, hidden in the tiniest things around us.</p> |
| <b>A2</b> | <p><b>Decarboxylative C-C bond formation by Iron photocatalyst</b></p> <p>The rising demand for energy from fossil fuels calls for developing more sustainable alternative sources. In this context, we need more commercially available, inexpensive building blocks like carboxylic acids, which are among the most common feedstocks found in natural organic molecules such as amino acids and fatty acids. In terms of cost, abundance and toxicity, Iron is one of the best elements to do that. I will introduce you to my research on this topic and tell you about how it is to work as a researcher.</p>                                                                                                                                                           |

## Beräkningskemi

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| <b>BK1</b> | <p><b>p53 - genomets väktare: att kartlägga ett rörligt mål</b></p> <p>I min forskning studerar jag p53-genomets rörliga struktur med hjälp av både simuleringar och experiment. p53 är en viktig del av kroppens försvar mot cancer och hindrar skadade celler från att utvecklas till tumörer. Syftet med forskningen är att undersöka hur mutationer kan förändra dess struktur och funktion. I presentationen kommer jag också att berätta om hur det är att arbeta som forskare.</p>                                                                                                          |
| <b>BK2</b> | <p><b>Can a pinch of salt control liquid crystals?</b></p> <p>This talk introduces the colourful field of liquid crystal physics. Chromonic liquid crystals are made of flat, dye-like molecules that stack into columns in water, forming ordered phases that sit between a true crystal and an ordinary liquid. Furthermore, we'll explore how adding simple molecular additives, like salt, let us steer which phase forms and how ordered it becomes. Every effect is revealed under the polarising microscope, where each phase paints its own distinctive pattern of colour and texture.</p> |

Biokemi

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| <b>B1</b> | <p><b>More than a barrier: the plasma membrane unpacked</b></p> <p>Every living organism - from bacteria to humans - is made up of cells. Each cell is wrapped in a flexible, dynamic and protective barrier called the cell membrane. In my talk, you will learn about the fascinating structure, organization and function of membranes, the different tools we use in our laboratory to study them and how this knowledge can help us understand disease and improve medicines and vaccines! You'll also hear what it's like to be a scientist working at the intersection of chemistry, biology, physics and computer science.</p> |
| <b>B2</b> | <p><b>Mapping the transcription: The science of in situ sequencing</b></p> <p>In situ sequencing is a technique that allows us to directly analyse DNA or RNA within the cells or tissues where they are originally located, without extracting them. This method helps researchers not only decode the genetic information but also observe the spatial arrangement and expression of genes in their natural environment. In my talk, I will explain how in situ sequencing provides valuable insights into how genes function and how it is to work as a researcher in this field.</p>                                               |
| <b>B3</b> | <p><b>Lighting up biology: From Folding to Function</b></p> <p>In this presentation, you will learn more about how proteins are produced in bacteria, why folding is important and what happens if proteins do not fold correctly. Since I work a lot with fluorescent proteins, I will use them as examples for my explanations, but I will also relate that how these proteins can be used more generally in research and industry.</p>                                                                                                                                                                                              |
| <b>B4</b> | <p><b>Studying the Structural dynamics of protein using NMR</b></p> <p>In this presentation, I will give you an introduction to NMR and explain why it is so important for protein structure identification. This analysing method can act as an atomic resolution camera to detect the dynamics of protein in detail. I will also tell you about how it is to work as a researcher.</p>                                                                                                                                                                                                                                               |

## Fysikalisk kemi och materialkemi

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| <b>F1</b> | <p><b>Synthetic blood</b></p> <p>In my presentation, I will explain how we try to produce synthetic blood. In our research project, we attempt to combine the biological protein haemoglobin, responsible for transporting oxygen in blood, with microgels. For this, a variety of different approaches are explored using various analytical methods. I will also tell you about how it is to work as a researcher in chemistry.</p>                                                                                                                                                                                                                     |
| <b>F2</b> | <p><b>Advancing electrochemical energy storage for a sustainable future</b></p> <p>This presentation will provide an overview of electrochemical energy storage technologies, spanning supercapacitors, aqueous batteries, solid-state batteries, and redox flow batteries. I will discuss my previous research on hybrid supercapacitors and zinc-ion batteries, followed by my current research on redox flow batteries and solid-state battery systems, highlighting material design strategies and future opportunities for sustainable energy storage. Finally, I will also give you insights in how it is to work as a researcher in chemistry.</p> |
| <b>F3</b> | <p><b>Elektrokemiska metoder för hållbar batteriåtervinning</b></p> <p>Litiumjonbatteriet är en viktig komponent i datorer, elbilar och mobiltelefoner. Metaller som litium, nickel och kobolt i uttjänta batterier behöver återvinnas men konventionella metoder är tekniskt begränsade och leder till miljöpåverkan. Detta projekt fokuserar på elektrodialys - en lovande metod som kräver mindre skadliga kemikalier och ger färre restprodukter.</p>                                                                                                                                                                                                 |