

Graphene - protection for medical applications?

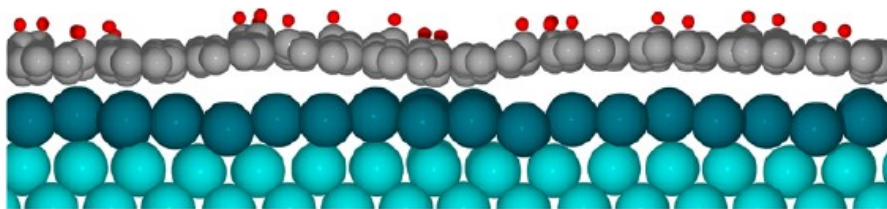


Figure: “Graphene Coatings: Probing the Limits of the One Atom Thick Protection Layer” [from our collaborators in Denmark, published in ACS Nano 6 10258 (2012)].

Graphene has attracted much attention, yet real applications are still very rare. One of the prized properties is the very low reactivity, especially towards organic molecules. This suggests that it could be a perfect material where bio-compatibility is required (i.e. on medical items implanted into the body)

In this project, we will grow graphene films in NanoLab, using the new CVD growth system. We will then test the effectiveness of the coating, in particular using x-ray photoelectron spectroscopy (XPS) in our own lab at NTNU. In particular, we will test the effectiveness of the coating against chemotherapy drugs, thus cancer drug delivery applications are the main focus.

The student will learn to use the cleanroom and CVD instrument and will grow graphene on suitable substrates. The student will also learn to use the XPS instrument and will perform the measurements. Assoc. Prof. Justin Wells and Ph.D. student Federico Mazzola will be available to help with training and use of the relevant instruments.

An aim of this project is to publish results in a leading scientific journal, showing the potential of graphene as a cancer drug delivery coating.