

## **Masterarbeit/Master project in Biological Sciences or Life Science**

### **„Genotoxicity of engineered Nanomaterials“**

Engineered nanomaterials (ENM) are intentionally manufactured nanomaterials with novel physicochemical characteristics that find application in industry, healthcare and in the field of biomedicine. Despite the many benefits of ENM, there is a growing concern on the potential consequences of ENM exposure to human health and the environment. Our interest lies in nanosafety assessment and the investigation of the genotoxic potential of ENM.

In the context of the proposed master project, we will investigate the effects of different ENM on DNA damage induction in human cells. One method to assess ENM induced DNA damage is the automated FADU (*Fluorimetric detection of Alkaline DNA Unwinding [1]*) assay, which measures DNA strand breaks. The results obtained by using this assay will be compared to results of the comet assay, currently the most frequently used method for assessment of nanogenotoxicity. Another part of this project is the analysis of potential interferences of ENM with the FADU assay.

Overall you will learn how to perform basic cell culture techniques, the handling of different nanomaterials and different genotoxicity methods.

The experimental work leading up to this master thesis will be performed at the Laboratory for Particles-Biology Interactions at Empa, St. Gallen, Switzerland. The academic supervisor of this Master project will be Prof Alexander Bürkle, University of Konstanz, Germany, and the Master Degree will be awarded by the University of Konstanz.

For further questions and applications please contact either:  
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[1] Moreno-Villaneuva M, et al. (2011). The automated FADU- assay, a potential high-throughput in vitro method for early screening of DNA breakage. *Altex* 28, 4/11:295-303.