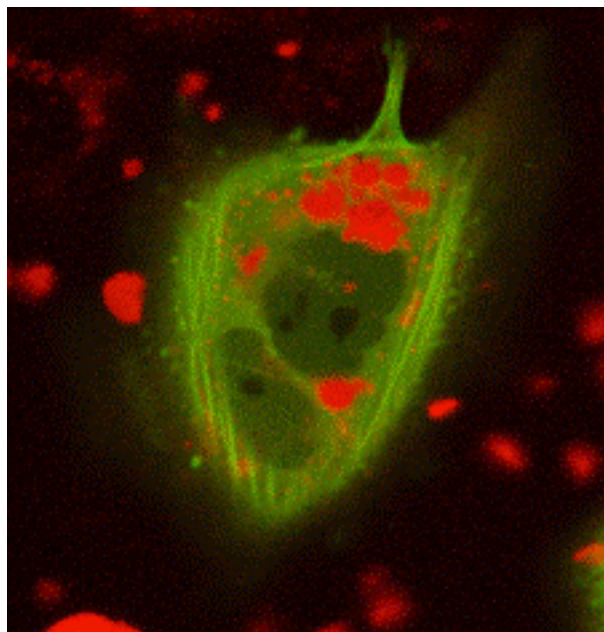

Nanocharacterization Group

(Mgr. Anna Fučíková, PhD)



The team operates at the intersection of physics, chemistry, and biology, focusing on the study of interactions between nanoparticles and biological environments. The laboratory is a key component of a broader facility that includes research groups for quantum sensing and ultra-fast spectroscopy. Under the leadership of **Anna Fučíková**, the group utilizes advanced **Atomic Force Microscopy (AFM)** methods in combination with microspectroscopy for the detailed investigation of nanostructured materials.

The group's primary research focus is the characterization of the so-called **protein corona**, which determines the fate of nanoparticles within living organisms. Within the framework of a current GAČR project (2024–2026), the scientists are developing methods to study corona formation at the level of individual nanoparticles, thereby overcoming the limitations of traditional ensemble measurements.

Furthermore, the group is engaged in the **mechanoscopy of mammalian cell lines**. As part of the European COST project (2025–2029), they contribute to the comprehensive study of plant cells, including data on adhesion and the mechanical properties of cell walls and surfaces.

Alongside its scientific activities, the laboratory provides expert services and contract research for both academic and industrial partners. It offers precise

nanocharacterization of surfaces with a resolution of up to 0.1 nm in the Z-axis and a scanned area of up to 400x400 μm . The group routinely performs analyses of nano-formulations of pharmaceuticals and provides professional consultancy regarding the synthesis and modification of nanoparticles. The group holds several patents in the field of nanoparticle preparation.

Anna Fučíková earned her doctorate from the Faculty of Mathematics and Physics, Charles University, in the field of Biophysics and Chemical Physics. Subsequently, she spent several years as a postdoctoral researcher at the Royal Institute of Technology (KTH) in Stockholm. Currently, she serves as an Assistant Professor at Charles University, where she has long been dedicated to the research of nanostructures and their bio-applications. The methods and findings developed within her projects – honored by the prestigious **Czech Head (Česká hlava)** award and the **Neuron Impuls** grant – have led to numerous patents and publications in renowned journals.