

## BP 21: Posters - Nanoparticles, Nanocrystals and Composites

Time: Monday 17:30–19:30

Location: Poster C

BP 21.1 Mon 17:30 Poster C

**Binding of plasma proteins to nanoagents studied by fluorescence correlation spectroscopy** — JUDITH J. MITTAG and  
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Nano drug carriers for medical applications are a topic of growing interest in interdisciplinary life sciences. In this context, functionalizing of the nanoparticle surface is generally desired to achieve engineered interactions with cells. Recent studies have emphasized the fascinating role of blood plasma proteins that obscure or enhance specific surface recognition, thereby affecting the mechanism of action and fate of nanoparticles within living systems. Hence, a detailed understanding of the protein corona composition and exchange kinetics in biological

environments is required. Fluorescence correlation spectroscopy (FCS) is a highly sensitive technique that offers the possibility of studying the binding of fluorescently labeled proteins like albumin, fibrinogen or transferrin to nanocarriers. We measure the kinetics of protein corona formation on silica nanoparticles in a model plasma and show that coarse-grained modeling based on non-Langmuir differential rate equations reproduces the data. In addition, we determined the binding affinities, encapsulation efficiency and the temperature-dependent release of thermosensitive liposomes in buffer and in blood plasma. Current work includes the interaction of nanoagents with special proteins like von Willebrand factor. Apart from being the largest protein in blood, it is shear sensitive and therefore might give access to new effects that are not considered or understood yet.