

<b>Title</b>	<b>Dynamics of protein corona formation on inorganic nanoparticles investigated with time resolved fluorescence techniques in microfluidic devices</b>
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### Project description:

Inorganic nanoparticles (NP) are widely used in biology and medicine as selective fluorescent labels as well as drug carriers to target specific sites. NP surface properties are fundamental in these application and a large part of the synthetic work in this field deals with an ad hoc functionalization of the surface. At the same time it is important to understand how the specifically engineered surface can be modified when the NP are exposed to biological fluids such as blood and serum. In particular the research project will focus on the study of protein adsorption on the NP surface, usually named protein corona formation. To this end frequency and time resolved fluorescence experiments will be carried out. In particular fluorescence correlation spectroscopy will allow monitoring the change in the hydrodynamic radius of the NP upon exposure to specific protein under physiological conditions. Fluorescence lifetime imaging will be used to observe and characterize the evolution of the protein corona when the NP and the protein are mixed inside a microfluidic device.

### Publications:

Rossetto, N.; Fortunati, I.; Gellini, C.; Feis, A.; Ferrante, C; *An optofluidic light detector based on the photoacoustic effect*, SENSORS AND ACTUATORS. B, CHEMICAL, 2016, 233, 71-75, DOI: 10.1016/j.snb.2016.04.046;  
Fede C; Fortunati I; Weber V; Rossetto N; Bertasi F; Petrelli L; Guidolin D; Signorini R; De Caro R; Albertin G; Ferrante C; Evaluation of gold nanoparticles toxicity towards human endothelial cells under static and flow conditions, MICROVASCULAR RESEARCH, 2015, 97, 147-155, DOI:10.1016/j.mvr.2014.10.010;  
Ferrante, C.; Fortunati, I.; Molinaro, I. Weber, V.; *BSA adsorption on gold nanoparticles investigated under static and flow conditions*, International Conference on BioPhotonics, BioPhotonics, 2015, 7304040, DOI: 10.1109/BioPhotonics.2015.7304040.

### Research funding:

PRAT2015, Title: "A model Study of protein corona formation on nanoparticles based on time resolved fluorescence and microfluidic devices"