**Gold complexes as chemotherapeutic agents: HERFD-XAS as a tool to study their biotransformation in human cancer cells**

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Organogold(III) complexes have recently attracted attention due to their promising anticancer properties, highlighting their potential as chemotherapeutic agents. However, detailed knowledge of the chemical transformations these Au(III) complexes undergo in biological environments, such as ligand exchange or reduction to Au(I)/Au(0), remains scarce. This gap limits our understanding of their molecular mechanisms of action. To address this, we employed High Energy Resolution Fluorescence Detected X-ray Absorption Near Edge Structure (HERFD-XANES) at the BM16-beamline to investigate the intracellular speciation of a series of organogold(III) complexes incubated in human cancer cells.

In this presentation, I will detail the sample preparation steps, comment on the (dis)advantages of HERFD-XANES for biological samples, and compare the experimental spectra with modelled spectra obtained with the FDMNES code. Finally, I will relate the observed intracellular speciation with the anticancer activity of these complexes.