

## **Scientific Relation about the visit of Dr. Ruta at CNR-ISC Sapienza (Rome) in December 2017**

During her stay at the CNR within the framework of the Short Term Mobility Program 2017, Dr. Beatrice Ruta has collaborated with the group of R. Angelini and B. Ruzicka (CNR-ISC) for the study of the out of-equilibrium dynamics of a colloidal suspension of Laponite, which is one of the major subject of investigation of the host CNR group. In particular, she has analysed X-ray Photon Correlation Spectroscopy (XPCS) data measured in collaboration with the Italian team in the European Synchrotron (ESRF) where she is actually a scientific collaborator. The analysis of the data has evinced the existence of a gel-like arrested structure in Laponite suspensions in  $D_2O$  and  $H_2O$  at low concentrations, which differs with the glassy-like behaviour usually reported at larger concentrations [F. A. Melo Marques et al. *Soft Matt.* 2015]. In addition, the comparison between the data measured in  $D_2O$  and those measured in  $H_2O$  shows that the presence of  $D_2O$  not only slows down the particle motion of almost one order of magnitude with respect to that of the same colloidal suspension in  $H_2O$ , but also gives rise to a more stress-like dominated particle dynamics. The results of this analysis will be now compared with Dynamic Light Scattering data measured by the Italian team in Rome and will be part of a common publication. Moreover, following a recent XPCS experiment on microgels, the data acquired and analysed in collaboration, have been discussed.

During the visit, B. Ruta has also reported about the scientific opportunities offered by the XPCS technique for the study of dynamical properties of complex soft systems, with particular emphasis on the future upgrade of the ESRF in Grenoble. Finally she has participated to different scientific meeting with CNR researchers to discuss possible future collaborations.