PhD position in Grenoble and Roskilde (Copenhagen-area)
The role of hydrogen bonding in the dynamics of alcohols

Hydrogen bonds play a key role in nature and technology and it is of great importance to understand their dynamics. Water is of course the most important hydrogen bonding liquid, but it has a highly anomalous behavior and it is difficult to supercool, which makes it challenging to study. In other systems eg. in polyalcohols and biomolecules the dynamics of the hydrogen bonds merges with other dynamics.

Monohydroxy alcohols have proven to be an interesting case for the study of hydrogen bonds, because the dynamics connected to the hydrogen bonds appears well separated in these systems.

This project will focus on the case of propanol-glycerol mixtures using a combination of quasielastic neutron scattering and dielectric spectroscopy.

The key question addressed is: *What is the specific role of the hydrogen bonding network at short time scales in the liquid state of alcohols?*
The student will work on two subprojects: Subproject 1 focuses on the pressure dependent dynamics and the direct comparison with pressure dependence of the slow dynamics seen in dielectrics. Subproject 2 focuses on separating coherent and incoherent neutron scattering contributions on selectively deuterated samples.

Conditions

The student will be mainly based at the Institute Laue-Langevin (ILL) in Grenoble (France) but with several longer secondments at Roskilde University (RUC) which is situated 20 minutes by train from Copenhagen (Denmark). The exact plan of when to work where will be made with the student.

The student will be employed for three years on a French working contract at the ILL[1] and enrolled at the Roskilde University Ph.D. School of Natural Science. The student will be part of the Glass and Time group[2] at RUC and the Spectroscopy group at ILL.

The supervisors will be Prof. Kristine Niss at Roskilde University (RUC) and Instrument Scientists Dr. Markus Appel and Dr. Bela Farago at Institute Laue-Langevin (ILL).

Required qualifications

We are looking for a student with a master degree in physics or a related subject. A student with an experimental background and experience with advanced data treatment is preferred. Some knowledge in chemistry is an advantage.

How to apply

Send an email to Kristine Niss (kniss@ruc.dk) and Markus Appel (appel@ill.fr) with the subject "ILL RUC PhD". Attach a CV, master degree diploma (if already available), and a brief motivation letter. You are also welcome to contact us if you have any questions.
This project is **open for applications until 31 May 2023** and will be closed after this date as soon as a suitable candidate has been found.

[1] https://www.ill.eu/careers/all-our-vacancies/phd-recruitment/open-phd-positions
[2] http://glass.ruc.dk