


Takeshi YAMADA	
Affiliation CROSS	
E-mail:t_yamada@cross.or.jp	
Title of the presentation	
QENS study on local dynamics of hydration water using Si311 analyzer	
<p>Water is an indispensable substance in our daily lives and is ubiquitous. Water in biomaterials and functional materials is closely related to their functions. These waters are hydrated with substances and confined in nanometer-sized spaces. Molecules confined in such nanospaces exhibit different structures and dynamics from those in the bulk due to interactions with molecules forming the space and size effects. Quasi-elastic neutron scattering (QENS) is suited to investigate the dynamics of hydrated water and/or bulk water at the molecular scale. Presenters have previously investigated the dynamics of water in phospholipid bilayers and in mesoporous silica pores, focusing on translational motion. On the other hand, the effect of restricted space on local modes such as rotational motion has not been well investigated.</p> <p>The objective of this study is to clarify local modes such as rotational motion of water molecules in restricted space using the Si311 analyzer of BL02-DNA in MLF J-PARC, which can measure high-Q regions with high energy resolution. Figures show the QENS profile of water in hydrophilic mesoporous silica (left (Si111 analyzer): energy resolution (EReso), 13 <math>\mu\text{eV}</math> , middle and right (Si311 analyzer) , EReso = 10<math>\mu\text{eV}</math> and 20 <math>\mu\text{eV}</math>, respectively). In the presentation, we will show the detailed fitting result.</p>	
