



**Séminaire**  
**Laboratoire de Radiolyse**

**Mardi 23 octobre à 10h**  
**CEA Saclay, bâtiment 546, pièce 21**

**New Insight on Aqueous Solution by Spectroscopy Analysis:  
Raman, XAS, IXS, SAXS and WAXS**

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The study of high temperature and high pressure aqueous solutions is of particular interest in the domain of life, earth and environmental sciences. At ambient conditions, water dissolves most of ionic compounds and leaves the organic elements undissolved. In supercritical conditions the solvation properties of liquids radically change. This general behaviour is reversed: organic molecules are readily dissolved in aqueous solutions; ionic species are precipitated due to ion-pairing or clustering effects. The generated structural modifications must be accurately described. These evolutions take thus several shapes, which correspond to gathering scales: density and compressibility evolution, clustering process or changes of the local order between or in molecules. The main topic of this presentation will be focused on the evolution of the hydrogen bonding in water in relation with the evolution of the permittivity of the solvent from the ambient to supercritical conditions. The new insight will be particularly exhibit through the results obtain by Raman spectroscopy, Wide Angle X-Ray Scattering (WAXS) and IXS.

References:

- D. Testemale, R. Argoud, O. Geaymond, J.-L. Hazemann, *Rev. Sci. Instrum.* 76, 043905 (2005)  
D. Testemale, J.-L. Hazemann, G. Pokrovski, J. Roux, Y. Joly, *J. Chem. Phys.*, 121, 8973-8982 (2004)  
P. Wernet *et al.* *J. Chem. Phys.*, 123, 154503 (2005)  
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