Self-organisation and miscibility limit in molecular hydrogen bonded liquids

A.Raihane1, C. Crauste-Thibierge1, P-A. Artola2 , B. Rousseau2, D. Morineau3, C. Alba-Simionesco1
(1) Laboratoire Léon Brillouin ,CNRS /CEA -UMR 12, CEA Saclay, 91191 Gif-sur-Yvette Cedex, France
(2) Laboratoire de Chimie-Physique ,CNRS -UMR 8000, Univ. Paris Sud Bât. 349 , 91405 Orsay Cedex France
(3) Institute of Physics of Rennes, CNRS-University of Rennes 1, France

Cristiane Alba-Simionesco

CEA, Paris, France

Email: christiane.alba-simionesco@cea.fr

Abstract:

We focus on molecular liquids that spontaneously form supramolecular clusters and on their consequences on the dynamical properties in the supercooled liquid state. We study a particular class of glass-forming liquids, mono-alcohols, where the molecular self-association driven by the presence of H-bonds is counterbalanced by the steric hindrance of the alkyl chains. We focus on an archetypical one, ter-butanol and analyze the mesoscopic structures and length-scales observed in binary mixtures, either with water on one side or with an aprotic solvent. Neutron and X-rays scattering, are combined with viscosity and dielectric experiments and supported by MD simulations.