**Transport Properties of the Tetrahydronaphthalene and N-Dodecane Mixture at High Pressure**

Cédric Giraudet[S], Henri Bataller, Gilles Pijaudier-Cabot and Fabrizio Croccolo[C]
*Laboratoire des Fluides Complexes et leurs Réservoirs, Université de Pau et des Pays de l'Adour, Anglet, France*
*fabrizio.croccolo@univ-pau.fr*

Mass diffusion and thermodiffusion are the two main processes governing the flux in a quiescent fluid mixture subject to a thermal gradient in the absence of convection. Oil companies show a great interest in predicting the behavior of complex fluid mixtures in well-exploitation conditions, i.e. they are interested in studying multi-component fluids, at high pressure and in porous media. In this Poster we will provide results of our recent measurements of the mass diffusion $D$ and the Soret $S_T$ coefficients of a binary mixture at different pressure levels from atmospheric up to 20MPa. The measurement involves dynamic Shadowgraph analysis of concentration non-equilibrium fluctuations allowing us detecting the mass diffusion coefficient and the solutal characteristic wave vector $q^*,s$ from which the Soret coefficient can be calculated. In order to perform these experiments a high-pressure cell has been especially developed allowing pressure control to a horizontal slab of fluid (1,2,3,4-tetrahydronaphtalene and n-dodecane, 50% w/w) of about L=5mm to which a temperature gradient is applied with an excellent temporal stability. The cell also provides optical access to the fluid parallel to the temperature gradient. The resulting values of the mass diffusion coefficient are well compatible with the Leffler-Cullinan relation as a function of the pressure, while the Soret coefficient shows a slight decrease over pressure. The calculated data points for the thermodiffusion coefficient $D_T$ are in good agreement with a previous (rare) high-pressure measurement made by means of a thermogravitational column.