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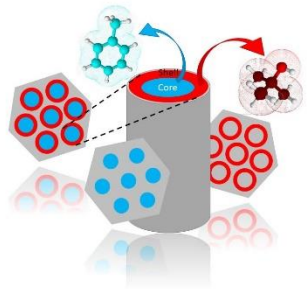
PhD thesis position at the University of Rennes 1 France

Topics : Condensed Matter Physics, Chemical-Physics, Nanoscience.

Title: Structuring binary solvents at the nanoscale by confinement in periodic mesoporous organosilicas



Project description: Fluids confined in nanometer-size porous geometry exhibit unique properties that have no equivalent in the corresponding bulk systems. As such, they deserve an extensive interest for their high potential of technological innovation in fields related to environment and energy.
Taking part in the mission to improve the ground basis knowledge of nanoconfined liquids, the ultimate goal of this PhD project is to direct the formation of new ordered liquid states by tuning the conditions of geometrical confinement and the liquid-solid surface interactions.
A broad range of complementary experiments will be applied to study the thermodynamics, the structure, and the molecular dynamics of multiphasic organic solvents imbedded in ordered porous solid materials having channel diameters spanning from tens of nanometers down to a few molecular sizes.

Profile and skills required: We are looking for an enthusiastic candidate, with a master degree in Physics, Chemistry or Material Science.

Conditions: 3 year contract starting 1st October 2018 – Gross salary : 1768€ based on a grant from the French Ministry of Higher Education, Research and Innovation.

The PhD project is hosted by the Institute of Physics of Rennes, a CNRS-University joined unit. Rennes is located in Brittany (France), c.a. 1h30 by train west from Paris.

We are committed to promoting equal opportunity and diversity in science. The project will benefit from high-quality and personalized scientific supervision.

Contact information:

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Application: Candidates are invited to send a Curriculum Vitae, cover letter, transcript of academic record and recommendation letters by e-mail (denis.morineau@univ-rennes1.fr).

Related references:

'Zeroing in on the true nature of fluids within nanocapillaries' *Press release of the American Institute of Physics*, January 10th (2017): https://publishing.aip.org/publishing/journal-highlights/zeroing-true-nature-fluids-within-nanocapillaries

'More room for microphase separation: An extended study on binary liquids confined in SBA-15 cylindrical pores', R. Mhanna, A. R. Abdel Hamid, S. Dutta, R. Lefort, L. Noirez, B. Frick, D. Morineau, J. Chemical Physics, 146, 024501 (2017)

'Multiple Glass Transitions of Microphase Separed Binary Liquids Confined in MCM-41', A. R.Abdel Hamid, R. Mhanna, P. Catrou, Y. Bulteau, R. Lefort, D. Morineau, J. Physical Chemistry C, 120, 11049-11053 (2016)

'Microphase Separation of Binary Liquids Confined in Cylindrical Pores', A. R. Abdel Hamid, R. Mhanna, R. Lefort, A. Ghoufi, C. Alba-Simionesco, B. Frick, D. Morineau, J. Physical Chemistry C, 120, 9245-9252 (2016)

'Thermodynamics of binary gas adsorption in nanopores', S. Dutta, R. Lefort, D. Morineau, R. Mhanna, O. Merdrignac-Conanec, A. Saint-Jalmes, T. Leclercq, Phys. Chem. Chem. Phys., 18, 24361-24369 (2016)