

## **Report on the activities of Stefan Sokolowski during his visit to the Institute of Condensed Matter of Ukrainian Academy of Sciences in Lviv.**

January 21-February 21, 2014

### 1. Scientific developments.

Together with J. Illytskyi we made the galley proof of our common scientific publication, entitled “Description of fluid-tethered chains interfaces: advances in density functional theories and off-lattice computer simulations”, that should appear in press in March 2014. We have also carried out intensive tests of the computer program for the analysis of different clusters formed by Janus particles confined in slit-like pores. This program has numerical, as well as graphical outputs that make possible an analysis of the results of computer simulations of phase transitions in confined Janus fluids.

We (also together with A. Trokhymchuk) started to write a new scientific publication concerning the phase transitions in confined lattice Janus fluids. All the computer simulations have been already performed. The calculations method was based on the simulations in the grand canonical ensemble, with hyperparallel and histogram reweighting techniques. A tentative title of this work reads “Computer simulations of P=phase transitions in confined lattice Janus fluids” and it should be submitted for publication in April 2014. Also, the results will be presented during the 9th Liquid Matter Conference (Lisbon, July 2014).

Together with Yu. Kalyuzhnyi we begin to write a paper on confined “patchy colloids” (a kind of model for Janus Particles). The model, introduced by Kalyuzhnyi and Cummings has a very interesting phase diagram in a bulk phase. The confinement leads to modifications of the phase behavior. This problem is currently under study.

### 2. Meetings and TOK.

On February 10, 2014, I provided a seminar, entitled “[Частинки Януса в умовах просторового обмеження](#)” (Confined Janus particles) for the scientific staff of ICMP. I had also numerous discussions with all the members of the group of J. Illytskyi and with Yu. Kalyuzhnyi.