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During my stay in Lviv together with dr P. Bryk I attended several discussions on the following topics: The phase behavior of thin films of block copolymers consisting of two chemically different segments connected by a covalent bond. The molecule consists of either fully flexible or rigid segments. Rod coil block polymers can self-assemble into various morphologies that greatly affect the optical and physical properties of the system. We determine full topology of the phase diagrams for a series of symmetric copolymer. We have found three distinct phases, the gas, disordered liquid and the ordered liquid phase. The critical chemical potential and critical density for the gas-disordered liquid increases non-monotonically, whereas the critical temperature increases monotonically with chain length. We also determine Minkowski measures in order to better characterize the structure of the adsorbed phases.

With prof. A. Trokhymchuk I discussed about the mechanism of melting transition in two-dimensional hard disk system with a rectangular-well attraction potential and possibility to solve this problem in efficient way using Monte Carlo simulations. L.M Pomirchi et al., (Theoretical and Mathematical Physics, v. 130 pp. 101-110 (2002)) shown that the melting can occur via a single first-order transition as well as continuously in accordance with the Kosterlitz-Thouless-Halperin-Nelson-Young theory. In particular, if the width of attracting part of the potential is equal to zero (the hard-disk system), melting occurs as first-order transition. As the attraction radius increases, the first-order transition is replaced by a continuous transition.