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During my stay in Lublin I, together with S. Sokołowski, started the preparation of the manuscript of the paper, entitled „Restricted primitive model for electrolyte solutions in slit-like pores with grafted chains: Microscopic structure, thermodynamics of adsorption, and electric properties from a density functional approach." This task consisted of:

- the development of the computer program
- the tests of the program correctness
- the review of the existing literature for the field connected with that work
- the computer simulations; they were continued after my return to Mexico (the calculations were time-consuming, so the paper was submitted for publication in April, 2013)

The main problems of this paper are as follows:
We applied a density functional theory to describe properties of a restricted primitive model of an ionic fluid in slit-like pores. The pore walls were modified by grafted chains. The chains were built of uncharged or charged segments. We studied the influence of modification of the pore walls on the structure, adsorption, ion selectivity, and the electric double layer capacitance of ionic fluid under confinement. The brush built of uncharged segments acts as a collection of obstacles in the walls vicinity. Consequently, separation of charges requires higher voltages, in comparison to the models without brushes. At high grafting densities the formation of crowding-type structure is inhibited. The double layer structure becomes more complex in various aspects, if the brushes are built of charged segments. In particular, the evolution of the brush height with the bulk fluid density and with the charge on the walls depends on the length of the blocks of charged spheres as well as on the distribution of charged species along chains. We also investigated how the dependence of the double layer capacitance on the electrostatic potential (or on the charge on the walls) changes with grafting density, the chain length, distribution of charges along the chain, the bulk fluid density, and, finally, with the pore width. The shape of the electric double layer capacitance vs. voltage changes from a camel-like to bell-like shape, if the bulk fluid density changes from low to moderate and high. If the bulk density is appropriately chosen, it is possible to alter the shape of this curve from the double hump to single hump by changing the grafting density. Moreover, in narrow pores one can observe the capacitance curve with even three humps for a certain set of parameters describing brush. This behavior illustrates how strong the influence of brushes on the electric double layer properties can be, particularly for ionic fluids in narrow pores.

Moreover, I attended the seminars in the Department for the Modelling of Physico-Chemical Processes and provided the lecture on the grafted layers of polyampholytes. I had several discussions with M. Borówko, A. Patrykiejew, W. Rżysko, P. Bryk and S. Sokołowski. I also discussed several scientific problems connected with natural grafted systems that apprar in soils (connections of soil organic matter with clay minerals) with Prof. Zofia Sokolowska, Institute of Agrophysics, Polish Academy of Sciences, Lublin.