PhD project in collaboration between Paul Scherrer Institute in Switzerland and Department of Analytical Chemistry of Warsaw University of Technology.

Adsorption of PLM carriers at liquid-liquid interfaces

The aim of the project is to study the adsorption of organic molecules at various interfaces, as models for the interface between the aqueous compartment and the polymeric membrane of Permeation Liquid Membranes (PLM). The latter are very widely used in different fields of separation science, as well as analytical chemistry. The molecules studied will be an azacrown ether and a fatty acid, as used for PLM membranes applied extensively in studies of transport of metal ions, e.g. Cu(II), Pb(II), Cd(II). The project will be realized in collaboration between Laboratory of Neutron Scattering of Paul Scherrer Institute in Switzerland and Chemical Sensor Research Group (CSRG) in the Department of Analytical Chemistry of Warsaw University of Technology in Poland. In the course of the project the adsorption of the two model molecules at liquid-air, solid-liquid and liquid-liquid interfaces will be studied in detail. The ultimate goal of the project is to understand the interfacial processes taking place during metal ions transfer through the PLM membrane.

The successful candidate will participate in the development of new experimental technique enabling studies of liquid-liquid interfaces using neutron reflectivity and other state-of-the-art interfacial techniques, like dynamic interfacial tension, x-ray reflectivity, ellipsometry, etc. He/she will spend approx. half of the time at PSI (Switzerland) and half at Warsaw University of Technology (Poland). The beginning of the project is expected on October, 1 2006.

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