**Transformation of spectral profiles of carbon dioxide at adsorption in nanopores near the critical temperature.**

The work is focused on the analysis of behavior of carbon dioxide vibrational spectra at isothermal adsorption in pores of nanoporous glasses at near-critical temperatures. Experimental data obtained at several temperatures (including near-critical) for 4 and 7 nm diameter pores was used. Calculations of spectra were performed using the concept of surface adsorption and capillary condensation. The spectral contributions of gas, adsorbed layers, and condensed phase inside the pore volume were assumed to be proportional to the mass fraction.

At 20.5 и 22.3 $^{o}$C which are far enough from critical value 31.1 $^{o}$C, the results of calculations are in a good agreement with experimentally observed transformation of spectrum from Lorentzian (at relatively low pressures) to evident two-component line shape at approaching the saturation pressure. In the case of near-critical temperature 30.5 $^{o}$C, the analysis of experimental data and calculations shows that carbon dioxide turns into the condensed phase inside the pores at abnormally low pressures. Moreover, at supercritical temperature 33 $^{o}$C the interface (impossible in bulk) between gaseous and condensed phase also appears inside the pores. The estimations of the surface tension coefficients at the sub- and supercritical temperatures were carried out.