

ACOUSTIC STUDIES OF RELAXATION PROCESSES DUE TO CONFORMATIONAL TRANSITIONS OF FURFURAL MOLECULES

FARKHAD AKHMEDZHANOV, SIROJIDDIN ZAINIEVICH MIRZAEV, KAMOLIDDIN EGAMBERDIEV, *Department of thermophysics of Multiphase Systems, Institute of Ion-Plasma and Laser Technologies, Tashkent, Uzbekistan.*

The acoustic spectra of furfural were studied in the frequency range from 0.1 MHz to 150 MHz and at temperatures 303 - 333 K by the coaxial resonator method using two different cells to cover the whole frequency range. The temperature in the cells was controlled with an accuracy of 0.05 degrees. The accuracy of the determination of the attenuation of acoustic waves in liquid furfural was approximately 5%. The studies were shown that the obtained experimental data can be explained with help of two relaxation processes. One relaxation process is observed in the low-frequency range of frequencies (0.2 MHz), and the second relaxation process is observed in the frequency range of about 2 MHz. The process with a lower relaxation frequency can be associated with the internal rotation of the furfural molecules "X0-cis" and "X0-trans". The kinetic analysis of acoustic data about conformation processes for a low-frequency relaxation process in pure furfural was carried out by using Eyring relations. The relaxation parameters and the velocity of acoustic waves, as well as the contribution of the different factors to the attenuation of acoustic waves have been determined from experimental results.