ANNOTATION

Reactions occurring in a particular solution often lead to a change in its properties, including the pH. In buffer solution, these changes are hardly noticeable, but they are occuring. In this work, we study the possibility of determining the pH of a Tris solution using the methods of vibrational spectroscopy. This method allow using the vibrational spectrum of a solution of a certain substance in a Tris buffer not only to determine the conformational features of this substance's molecules , but also monitor the acidity of the solution at the same time.

It was obtained laser Raman and FTIR spectra of aqueous solutions of Tris at different pH values that was obtained by adding hydrochloric acid to various concentrations in the initial solution. Real pH values were measured independently using a pH meter. The characteristic lines, the frequencies or relative intensities of which vary with pH, was detected in the vibrational spectra. The dependences of the parameters of the characteristic lines on the pH make it possible to determine the dissociation constant of Tris molecules (pK) with high accuracy. The obtained values are consistent with known literature data, as well as with the results of calculations.