

DYNAMICS OF ION-PHOSPHATE LATTICE
OF DNA IN LEFT-HANDED DOUBLE HELIX FORM

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S u m m a r y

The conformational vibrations of *Z*-DNA with counterions are studied in the framework of a phenomenological model developed. The structure of a left-handed double helix with counterions neutralizing the negatively charged phosphate groups of DNA is considered as an ion-phosphate lattice. The frequencies and the Raman intensities for the modes of *Z*-DNA with Na⁺ and Mg²⁺ ions are calculated, and the low-frequency Raman spectra are built. At the spectral interval about the frequency 150 cm⁻¹, a new mode of ion-phosphate vibrations, which characterizes the vibrations of Mg²⁺ counterions, is found. The results of our calculations show that the intensities of *Z*-DNA modes are sensitive to the concentration of magnesium counterions. The obtained results describe well the experimental Raman spectra of *Z*-DNA.