STUDIES OF THE VIBRATIONAL ENERGY LEVEL OF H_2O BY ALGEBRAIC AND DFT APPROACHES

S.R. Karumuri[1], *V.U.M. Rao*[2], *J. Vijaya Sekhar*[3], *M.S. Surendrababu*[4], *T.B. Patrudu*[4], *N. Vamsikrishna*[4], *K.S. Babu*[5], *V.S.S. Kumar*[6], *G. Srinivas*[7]

[1]Department of Electronics & Instrumentation, Lakireddy Bali Reddy College of Engineering Mylavaram, Krishna District (*Andhra Pradesh, India; e-mail: srinivasakarumuri@gmail.com*),
[2]Department of Applied Mathematics, College of Science & Technology, Andhra University (*Andhra Pradesh, India*),
[3]Department of Mathematics, Jawaharlal Nehru Technological University (*Kakinada Andhra Pradesh, India*),
[4]Department of Mathematics & Chemistry, GITAM University (*Hyderabad, Andhra Pradesh, India*),
[5]Department of Physics, Miracle Engineering College (*Bhogapuram, Andhra Pradesh, India*),
[6]Department of Electronics & Instrumentation, Rajeev Gandhi Memorial Engineering College (*Nandyal, India*),
[7]Department of Physics, KL University (*Vadeswaram, Guntur, Andhra Pradesh, India*)

S u m m a r y

The molecular spectroscopy is a branch of physics that deals with the interaction of electromagnetic radiation with matter. Within new theoretical approaches, we have calculated the stretching and bending vibrational energy levels of a water molecule in fundamental and overtone modes. The present calculation not only predicts the higher overtones, but also shows good agreement with a few experimental data.