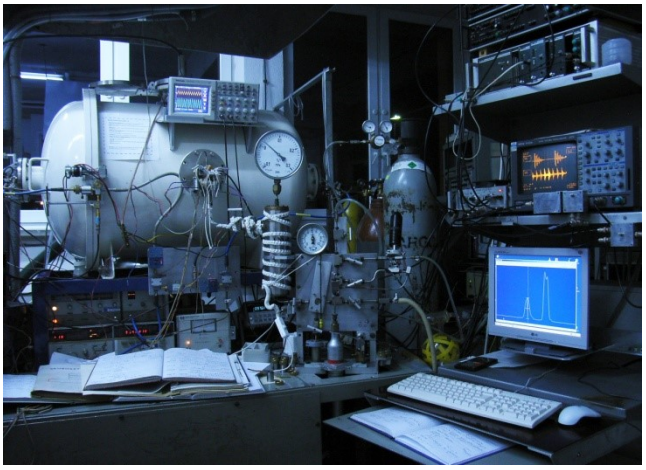
ROTATIONAL SPECTROSCOPY

OF WEAKLY BOUND INTERMOLECULAR CLUSTERS AND OF MOLECULES OF ATMOSPHERIC AND ASTROPHYSICAL IMPORTANCE

Group of Vibrational and Rotational Spectroscopy offers PhD studies in rotational spectroscopy, a technique associated with investigation of high resolution gas phase molecular spectra ranging from the microwave to the THz region. This method is the principal source of reference information on key molecular properties, such as structures, electric dipole moments, and intra- and inter-molecular interactions. Laboratory rotational spectroscopy also provides the basis of astrophysical molecular studies by radio-astronomy, and is the starting point for searches in interstellar molecular clouds for molecules that are building blocks of life as we know it.

Our group has two principal home-built, universal instruments, for studies at 2-550 GHz. We are also involved in scientific cooperation with similar research laboratories in EU and USA.

One of our instruments: a Fourier transform microwave spectrometer (on the right) allows investigation of molecules and of molecular complexes at conditions of supersonic expansion and effective temperature of 1K.



Our Group also maintains the website „PROSPE – Programs for Rotational Spectroscopy" http://info.ifpan.edu.pl/~kisiel/prospe.htm, which is a database of computer programs and of other useful information on the field of rotational spectroscopy, and we have many regular users from over the world.

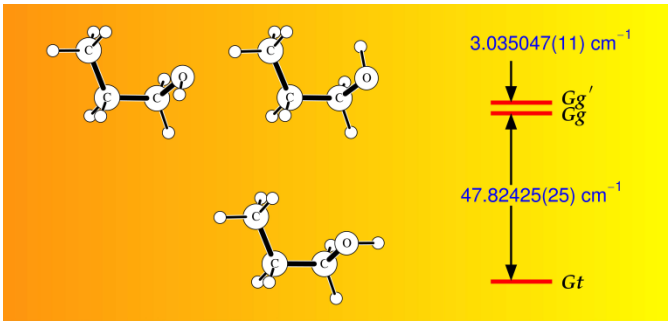


Illustration from a sample completed research project: precise determination of energy differences between conformers of *n*-propanol, Z.Kisiel et al., *Phys. Chem. Chem. Phys.* **12**, 8329-8339 (2010).

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