

COMB-REFERENCED MOLECULAR BEAM SPECTROSCOPY OF POLYCYCLIC HYDROCARBONS

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We have studied the electronic excited states of aromatic hydrocarbons such as, benzene or naphthalene by high-resolution spectroscopy.^a In the excited electronic states of these molecules, there are various interesting interactions such as intramolecular vibrational energy redistribution (IVR), intersystem crossing (ISC), and internal conversion (IC).

In the present study, we observe high-resolution spectra of larger polycyclic hydrocarbons such as perylene. In our experiment, we use a frequency-doubled single mode Ti:Sapphire laser as a light source. Sub-Doppler spectra are obtained with a supersonic molecular beam, which crosses the laser light at right angles. A GPS-disciplined Er-doped fiber optical frequency comb is used as a frequency ruler to decide transition frequencies at the uncertainty of 10 kHz.

^a A. Nishiyama, K. Nakashima, A. Matsuba, and M. Misono, *J. Mol. Spectrosc.* **318**, 40 (2015).