

HIGH-RESOLUTION SPECTROSCOPY OF POLYAROMATIC HYDROCARBONS WITH A SINGLE MODE Ti:SAPPHIRE LASER DISCIPLINED BY AN OPTICAL FREQUENCY COMB

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We have been studying the dynamics of polyaromatic hydrocarbons by high-resolution spectroscopy with a supersonic molecular beam. The target molecules are 9-methylanthracene, 1,2-benzanthracene, perylene, and so on. For the rotationally-resolved spectra of these molecules, the determination of the frequency axis is a crucial issue [1].

In this study, we developed a frequency control system of a CW Ti:Sapphire laser disciplined by an Er-doped fiber optical frequency comb. The frequency of the Ti:Sapphire laser is scanned over several GHz with the uncertainty of about 15 kHz. Or the Ti:Sapphire laser frequency is fixed to an arbitrary single value for a long time interval. Now we try to observe high-resolution spectra of polyaromatic hydrocarbons with this system.

[1] A. Nishiyama, A. Matsuba, and M. Misono, *Opt. Lett.* 39, 4923 (2014).