INFRARED FLUORESCENCE MEASUREMENTS OF GASEOUS BENZENE WITH A NEW HOME-MADE SPECTROMETER

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Production and characterization of organic molecules such as gas phase Polycyclic Aromatic Hydrocarbons (PAHs) are one of the major challenges in laboratory astrophysics. Infrared spectral signatures are emitted by molecules in interstellar clouds submitted to UV radiations from surrounding stars. These infrared bands, the so-called Aromatic Infrared Bands (AIBs), have been attributed to PAHs since now 27 years[b]. However, experimental works on infrared emission are quite rare.
That is why we are developing an unique infrared spectrometer which collects and detects the infrared emission light from gas phase UV-excited PAHs. We are currently testing the spectrometer with benzene and its derivatives. Their infrared fluorescence decays will be presented, with an attempt to understand the competitive relaxation pathways.

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