SEMINAIRE ISMO

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Laser-desorption supersonic-jet spectroscopy of porphycene and isotpologues: Effect of weak structural perturbation on proton tunneling

Porphycene (Pc) is a model for coherent double hydrogen tunneling in a symmetrical double well potential, as evidenced by tunneling splittings observed in electronic absorption and emission. The results led to reliable assignment of low frequency modes in S0 and S1 electronic states. The values of tunneling splitting were determined for ground state vibrational levels.

In the case of tautomerization-promoting 2Ag mode, tunneling splitting values significantly increase with the vibrational quantum number. This mode has been used as a probe to monitor effect of weak structural perturbations on double proton tunnelling. Our laser induced fluorescence excitation (LIF) and single vibronic level fluorescence (SVLF) spectral measurements in supersonic-jet along with theoretical calculation confirm quenching of double proton tunnelling due to secondary isotopic effect.

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