Highest resolution FTIR spectroscopy of indene (C_9H_8) and indane (C_9H_{10}) with synchrotron radiation

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One of the great challenges of astronomical infrared spectroscopy is the identification of the Unidentified Infrared Bands (UIBs) found in several interstellar objects. Polycyclic Aromatic Hydrocarbons (PAHs) and saturated polycyclic hydrocarbons have been proposed to be the carrier of the UIBs [1]. For that reason we have started to extend our previous investigation of naphthalene [2], indole [2], azulene [3] and biphenyl [4] towards compounds consisting of an aromatic and a saturated carbon ring. Among them indene (C_9H_8) and indane (C_9H_{10}) are one of the simplest bicyclic compounds.

We have measured the IR spectrum of indane and indene with our ETH prototype and ETH-SLS interferometers [2,5-7] in the range 600 to 900 cm^{-1} using a resolution of 25 MHz and have obtained the first rotationally resolved infrared spectra of these compounds. We shall discuss preliminary assignments of the *c*-type bands of indene at 690.6 cm^{-1}, 718.0 cm^{-1} and 766.5 cm^{-1} as well as the bands of indane at 737.7 cm^{-1} and 750.9 cm^{-1}. In addition, we shall compare these bands with UIBs in the range 10 to 13 μm.

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