

$^{120}\text{SnD}_4$: A SYMMETRIC TOP?

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In normal stannane, $^{116}\text{SnH}_4$, it has been found that the dynamical symmetry of the molecule changes from that of a spherical top to a prolate symmetric top when vibrational localisation takes place in stretching vibrational overtones. What about deuterated stannane, $^{120}\text{SnD}_4$? Does localisation of vibrational energy take place and if it does, in which overtone?

Looking at the high resolution FTIR spectrum of the second stretching vibrational overtone of $^{120}\text{SnD}_4$ the so called symmetric top K -structure of a prolate symmetric rotor can be observed. So has deuterated stannane 'become' a symmetric top? To get an answer high resolution FTIR spectra of the fundamentals as well as the first and second stretching vibrational overtones of deuterated stannane have been rotationally analysed. The results will be presented, and they indicate a surprisingly similar behaviour of deuterated stannane and normal stannane.