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Title:Far infrared Fourier-transform spectroscopy of mono-deuterated hydrogen peroxide HOOD

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Abstract:We present the gas phase spectrum of singly deuterated hydrogen peroxide, HOOD, in its vibrational ground state, recorded by the high resolution Fourier-transform interferometer located at the AILES synchrotron beamline connected to SOLEIL More than 1000 transitions in the range from 20 to 143 cm^{-1} were assigned, leading to a set of preliminary rotational and centrifugal distortion constants determined by least squares fit analysis. All transitions are split by the tunneling motion of a hindered internal rotation. The splitting has been determined to be 5.786(13) cm^{-1} in the torsional ground state and it shows a dependence on the rotational quantum number K_a . Some perturbations were not treated yet, but the present analysis permits to obtain a preliminary set of parameters. (C) 2012 Elsevier Ltd. All rights reserved.

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