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► **To cite this version:**

I. Haykal, D. Doizi, A. Perrin, F.-K. Tchana, V. Boudon, et al.. On-Line Measurement of Gaseous Iodine Species During a PWR Severe Accident. HRMS 2015 - The 24th Colloquium on High Resolution Molecular Spectroscopy, Aug 2015, Dijon, France. cea-02509728

HAL Id: cea-02509728

<https://cea.hal.science/cea-02509728>

Submitted on 17 Mar 2020

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ON-LINE MEASUREMENT OF GASEOUS IODINE DURING A PWR SEVERE ACCIDENT

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Iodine is a highly radio-toxic element, due to its affinity to the thyroid, and represents the major part of the radioactivity released during a nuclear accident. In the context of nuclear safety and radio-protection, we are interested in identifying the iodine gaseous species which are released, in the nuclear power plants, under molecular (I_2) and organic (CH_3I) forms. Therefore, we are working on providing a spectroscopic database for both species. While the infrared spectrum of the ν_6 band of methyl iodide was previously studied ¹, only 4000 lines were assigned. We present the rovibrational analysis of a high quality experimental spectrum, of this band, recorded at the AILES beamline of the synchrotron SOLEIL, (780-850 cm^{-1}) with the glowbar internal source. The analysis of this incomplete spectrum was accomplished in collaboration with the LISA and led to 5000 experimental frequencies accurately measured at a resolution of $10^{-3} cm^{-1}$. The analysis of the full spectral range is in progress. On the other hand, we tested the C3vTDS package of the XTDS² program developed in Dijon on the CH_3I prototype molecule. These results will be shown and discussed. In the case of the molecular iodine, we are developing, in collaboration with the university of Joseph Fourier in Grenoble, an IBB-CEAS (Incoherent Broad Band Cavity Enhanced Absorption Spectroscopy) to measure its absorption spectrum at 520 nm.

This work takes part of the DECA-PF (diagnosis of core degradation by measurement of fission products) project which is supported by the French National Agency (ANR) under the PIA program (Programme d'Investissement d'Avenir).

¹R. Paso and S. Alanko, *J. Mol. Spectrosc.*, **157**, 122–133 (1993).

²Ch. Wenger, V. Boudon, M. Rotger, M. Sanzharov, J.-P. Champion, *J. Mol. Spectrosc.*, **251**, 102–113 (2008).
