

## THE NANOCOSMOS GAS CELL AS A TOOL FOR SPECTROSCOPY: THE MILLIMETERWAVE SPECTRUM OF N-ETHYLFORMAMIDE

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Several molecules containing a peptidic bond in their structure such as formamide ( $\text{HCONH}_2$ ) and some derivative compounds have been already found in the interstellar medium<sup>a</sup>. In case of N-ethylformamide ( $\text{HCONHCH}_2\text{CH}_3$ ), only the microwave spectrum is known up to 20 GHz hence the rotational constants for the conformers found are not accurate enough to detect the molecule in the interstellar medium.

In the present work we have employed the Nanocosmos Gas Cell spectrometer to record the millimeterwave spectrum of N-ethylformamide. The recently built broadband Fourier transform millimeterwave spectrometer<sup>b</sup> employs radio astronomical receivers for the Q-band (31.5-50GHz) and W-band (72-116GHz) to detect the thermal emission of the molecules in the Gas Cell chamber. The aim consists on establishing the concept of Nanocosmos Gas Cell as a new tool for high resolution broadband molecular spectroscopy in the millimeterwave region. In this study not only the ground state but also a higher energy conformer and some vibrational excited states have been identified and analyzed. The rotational constants will be used to search for this molecule in the space.

<sup>a</sup>R.H. Rubin *et al.*, **1971**, *ApJL*, 169, L39, and see *e.g.* A.J. Remijan *et al.*, **2014**, *ApJ*, 783, 77

<sup>b</sup>I. Tanarro *et al.*, **2018**, *A&A*, 609, A15 and J. Cernicharo *et al.*, **2019**, *A&A*