

ULTIMO ARTÍCULO PUBLICADO

Journal: Sensors

Paper: Multi-Line Fit Model for the Detection of Methane at $\nu_2 + 2\nu_3$ Band using Hollow-Core Photonic Bandgap Fibers
AUTHORS: Ana M. Cubillas, Jose M. Lazaro, Olga M. Conde, Marco N. Petrovich, Jose M. Lopez-Higuera

Abstracts:

Hollow-core photonic bandgap fibres (HC-PBFs) have emerged as a novel technology in the field of gas sensing. The long interaction pathlengths achievable with these fibres are especially advantageous for the detection of weakly absorbing gases. In this work, we demonstrate the good performance of a HC-PBF in the detection of the $\nu_2 + 2\nu_3$ band of methane, at 1.3 μm . The Q-branch manifold, at 1331.55 nm, is targeted for concentration monitoring purposes. A computationally optimized multi-line model is used to fit the Q-branch. Using this model, a detection limit of 98 ppmv (parts per million by volume) is

estimated.