

Pulsed IR photoacoustic spectroscopy of $\nu_3 - \nu_2$ combination band of NO_2

M. A. Gondal*, I. A. Bakhtiari, S. M. A. Durrani

Laser Research Laboratory, Energy Resources Division, The Research Institute King Fahd University of Petroleum and Minerals, Dhahran 31261, Saudi Arabia

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Abstract

A resonant photoacoustic (PA) spectrometer based on pulsed laser excitation has been developed locally. The absorption spectra of NO_2 have been recorded in the 9-11 μm wavelength region for the first time using a single mode TEA pulsed CO_2 - laser. The spectra have been tentatively assigned to $\nu_3 - \nu_2$ combination band. The minimum detection limit achieved with our setup is 100 ppbV, in spite of not having any direct absorption band of NO_2 in this region. The parametric study of PA system using pulsed TEA CO_2 - laser was also carried out. The study has revealed that CO_2 laser could be applied for trace detection of NO_2 in the field.
