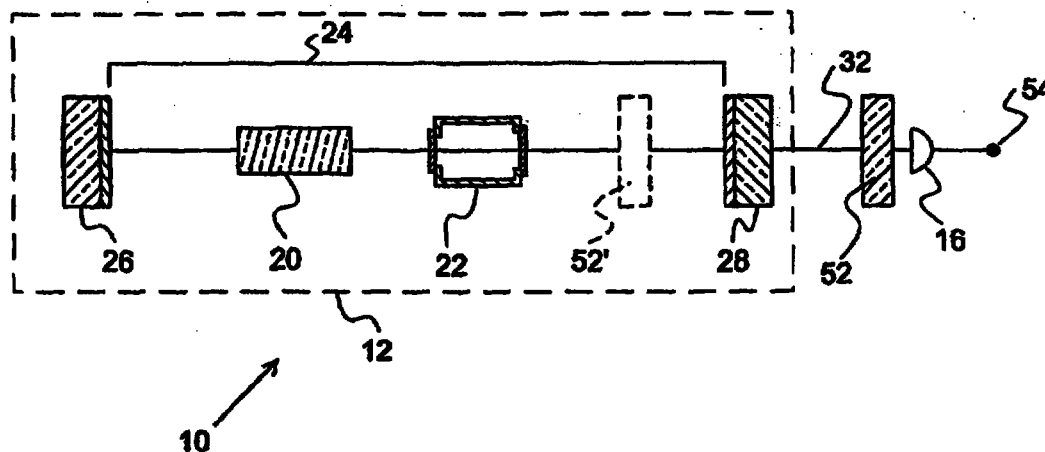




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G01N 21/61	A1	(11) International Publication Number: WO 00/20844 (43) International Publication Date: 13 April 2000 (13.04.00)
(21) International Application Number: PCI/US99/22721 (22) International Filing Date: 30 September 1999 (30.09.99) (30) Priority Data: 09/166,003 2 October 1998 (02.10.98) US (71) Applicant: INNOVATIVE LASERS CORPORATION [US/US]; Suite 114, 3280 E. Hemisphere Loop, Tucson, AZ 85706 (US). (72) Inventors: ATKINSON, George, H. ; 13630 Sahuaro Sunset, Tucson, AZ 85749 (US). PILGRIM, Jeffrey, S. ; 19 Esquina Road, Santa Fe, NM 87505 (US). (74) Agent: COLLINS, David, W. ; Benman & Collins, Suite 125B, 75 West Calle de las Tiendas, Green Valley, AZ 85614 (US).	(81) Designated States: CA, CN, JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published With international search report.	

(54) Title: **CONTAMINANT IDENTIFICATION AND CONCENTRATION DETERMINATION BY MONITORING THE WAVELENGTH OF THE OUTPUT OF AN INTRACAVITY LASER**



(57) Abstract

A method and apparatus for detecting the presence of a specific concentration of gaseous species within a calibrated range in a gas sample is disclosed. The ILS gas detection system (10) of the present invention simply comprises an ILS laser (12), a wavelength-selective optical element (52), and an optical detector (16). However, the potential or operational wavelength bandwidth of the ILS laser (12) is preferably entirely included within one of the absorption bands or regions assigned to the intracavity gaseous species being monitored. Thus, within the calibrated range, the presence of the gaseous species changes the output laser wavelength or output intensity at the specific wavelength of the ILS laser (12). Consequently, only the wavelength of the output or the output intensity at the specific wavelength of the ILS laser (12) need be monitored in order to quantitatively determine the concentration of the absorbing gaseous species within a calibrated range when using the ILS method of the present invention.