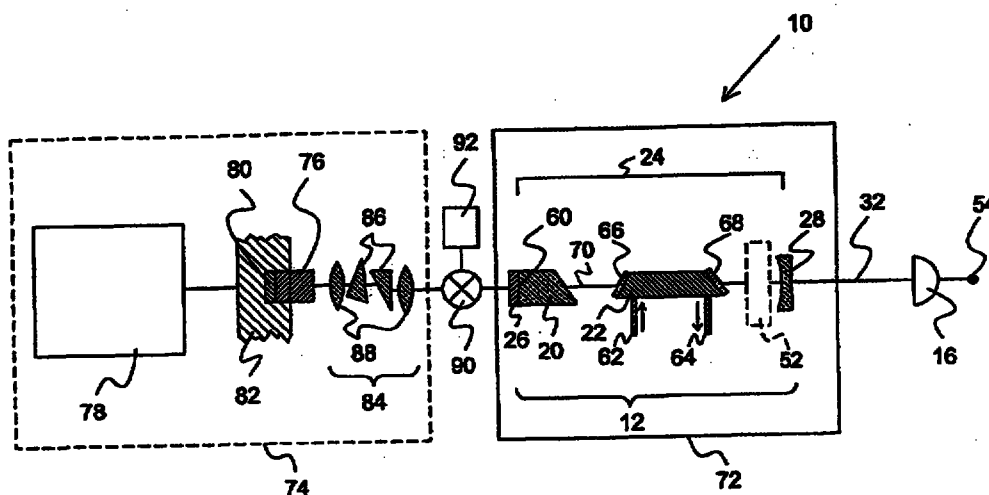




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G01N 21/86	A1	(11) International Publication Number: WO 00/29834 (43) International Publication Date: 25 May 2000 (25.05.00)
(21) International Application Number: PCT/US99/26982 (22) International Filing Date: 12 November 1999 (12.11.99) (30) Priority Data: 09/192,744 16 November 1998 (16.11.98) US (71) Applicant: INNOVATIVE LASERS CORPORATION [US/US]; Suite 114, 3280 East Hemisphere Loop, Tucson, AZ 85706 (US). (72) Inventors: ATKINSON, George, H. ; 13630 Sahuaro Sunset, Tucson, AZ 85749 (US). PILGRIM, Jeffrey, S. ; 19 Esquina Road, Sante Fe, NM 87505 (US). (74) Agent: COLLINS, David, W. ; 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 <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

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



(57) Abstract

A method and apparatus (10) for detecting the presence of a specific concentration of gaseous species within a calibrated range in a gas sample are disclosed. The ILS gas detection system (10) of the present invention simply comprises an ILS laser (12) and an optical detector (16). However, the spectral 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 temporal characteristics of the ILS laser (12). Consequently, only a temporal characteristic of the output of the ILS laser (12) need be monitored in order to quantitatively determine the concentration of the absorbing gaseous species when using the ILS method of the present invention.