



PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : G02B 6/42, 6/38, C03C 27/02, G01J 3/02		A1	(11) International Publication Number: WO 96/37794
			(43) International Publication Date: 28 November 1996 (28.11.96)
(21) International Application Number: PCT/US96/06528 (22) International Filing Date: 11 May 1996 (11.05.96) (30) Priority Data: 08/450,597 25 May 1995 (25.05.95) US (71) Applicant: EASTMAN CHEMICAL COMPANY [US/US]; 100 North Eastman Road, Kingsport, TN 37660 (US). (72) Inventors: BUCHANAN, Norma, Lindsey; P.O. Box 7072, Kingsport, TN 37664 (US). ALSMEYER, Daniel, Charles; 104 Shadow Wood Lane, Kingsport, TN 37663 (US). NEL- SON, Gregory, Wayne; 204 Park Ridge Court, Kingsport, TN 37664 (US). EDWARDS, Roger, Dale; Route 1, Box 279, Blackwater, VA 24221 (US). NICELY, Vincent, Alvin; 2605 Suffolk Street, Kingsport, TN 37660 (US). (74) Agent: TUBACH, Cheryl, J.; P.O. Box 511, Kingsport, TN 37662-5075 (US).			(81) Designated States: AU, BR, BY, CA, CN, CZ, HU, JP, KR, MX, NO, NZ, PL, RU, SG, SK, TR, UA, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. 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: ROBUST SPECTROSCOPIC OPTICAL PROBE

(57) Abstract

Disclosed is a spectroscopic probe apparatus useful for Raman, near infrared, luminescence, ultraviolet or visible spectroscopies that is formed with a robust method of construction using a molten metal soldering technique. The disclosed method and apparatus provides an optical probe that is easy to manufacture yet able to withstand drastic environmental conditions without damage and produce useful spectroscopic results under such conditions. In a preferred embodiment of the present invention, optical probe (100) comprises a housing (101), closed at one end by tip (102). Two optical fibers (103 and 104), one serving as an excitation channel for radiation from a source to a composition to be analyzed, the other comprising a collection channel for transmitting radiation from the irradiated composition to remotely situated detector means, extend from the terminal surface (105) of the tip through the length of the housing. On the terminal surface (105) of tip (102) is formed a cavity (106), which is filled with molten metal solder that solidifies on cooling to a solder plug. This plug comprises means for securing and sealing the ends of the optical fibre at the terminal surface of the probe tip.

