PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G01N 21/64

A3

(11) International Publication Number: WO 00/11024

(43) International Publication Date: 2 March 2000 (02.03.00)

(21) International Application Number: PCT/US99/19374

(22) International Filing Date: 20 August 1999 (20.08.99)

(30) Priority Data:
60/097,506 21 August 1998 (21.08.98) US

(71) Applicant: SURROMED [US/US]; 1060 East Meadow Circle, Palo Alto, CA 94303 (US).

(72) Inventors: DIETZ, Louis, J.; 550 S. Shoreline Boulevard, Mountain View, CA 94041 (US). WALTON, Ian; 346 Lakeview Way, Redwood City, CA 94062 (US). NORTON, Scott; 600 Rainbow Drive, #149, Mountain View, CA 94041 (US).

(74) Agents: SWANSON, Barry, J. et al.; Swanson & Bratschun, L.L.C., Suite 200, 8400 E. Prentice Avenue, Englewood, CO 80111 (US).

(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published
With international search report.

(88) Date of publication of the international search report:
29 June 2000 (29.06.00)

(54) Title: NOVEL OPTICAL ARCHITECTURES FOR MICROVOLUME LASER-SCANNING CYTOMETERS

(57) Abstract

Instrumentation and methods for performing charged coupled device (CCD) based confocal spectroscopy with a laser spot array are provided. A sample is scanned by a plurality of excitation laser scanning spots. The scanning spots are generated, for example, by converting a laser excitation beam into an array of beams using a multiple beam generating optic, such as a Damann grating. Each scanning spot scans and excites a separate region of the sample. Fluorescent light emitted by the sample is collected and imaged onto the surface of a CCD detector that has been electronically divided into bins of pixels, with each bin corresponding to one of the scanning spots. Each bin functions as a confocal aperture in which the confocal depth of focus can be controlled by changing the dimensions of the bin. Plural CCD detectors can be used for multichannel imaging of individual wavelengths. The instrumentation and methods are useful in any spectroscopic application including microscopy and microvolume laser scanning cytometry (MLSC).

