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(71) Applicant (for all designated States except US):

LUXMUX TECHNOLOGY CORPORATION
 [CA/CA]; 53 Everhollow Avenue SW, Calgary, Alberta
 T2Y 0A9 (CA).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DATTNER, Yonathan** [CA/CA]; 53 Everhollow Avenue SW, Calgary, Alberta T2Y 0A9 (CA). **YADID-PECHT, Orly** [IL/CA]; 518 Garrison Square SW, Calgary, Alberta T2T 6B5 (CA).(74) Agents: **WHITT, Michael, R.** et al.; Bennett Jones LLP, 4500 Bankers Hall East, 855 2nd Street SW, Calgary, Alberta T2P 4K7 (CA).

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(54) Title: A FULLY INTEGRATED COMPLEMENTARY METAL OXIDE SEMICONDUCTOR (CMOS) FOURIER TRANSFORM INFRARED (FTIR) SPECTROMETER AND RAMAN SPECTROMETER

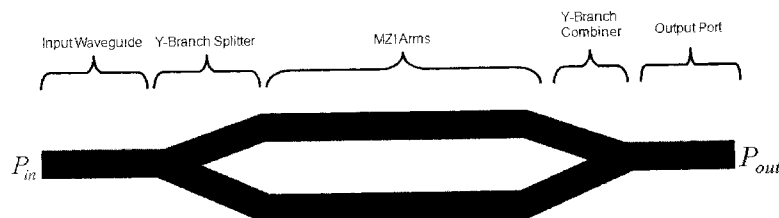


Figure 6b

(57) Abstract: A Fourier Transform Infrared (FTIR) Spectrometer integrated in a CMOS technology on a Silicon-on- Insulator (SOI) wafer is disclosed. The present invention is fully integrated into a compact, miniaturized, low cost, CMOS fabrication compatible chip. The present invention may be operated in various infrared regions ranging from 1.1 μm to 15 μm or it can cover the full spectrum from 1.1 μm to 15 μm all at once. The CMOS-FTIR spectrometer disclosed herein has high spectral resolution, no movable parts, no lenses, is compact, not prone to damage in harsh external conditions and can be fabricated with a standard CMOS technology, allowing the mass production of FTIR spectrometers. The fully integrated CMOS-FTIR spectrometer is suitable for battery operation; any and all functionality can be integrated on a chip with standard CMOS technology. The disclosed invention for the FTIR spectrometer may also be adapted for a CMOS-Raman spectrometer.