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Murnick

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[54] **METHODS AND APPARATUS FOR ISOTOPIC ANALYSIS**

[75] Inventor: **Daniel E. Murnick**, Bernardsville, N.J.

[73] Assignee: **Rutgers, The State University**, Piscataway, N.J.

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[52] **U.S. Cl.** **436/35**; 436/56; 436/133; 436/172; 436/149; 436/153; 356/308; 356/311; 356/315

[58] **Field of Search** 356/308, 315, 356/311; 436/35, 56, 133, 172, 149, 153

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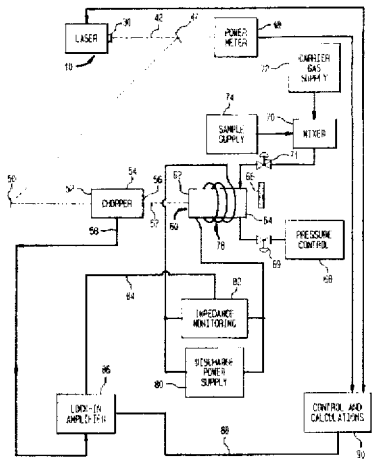
Primary Examiner—Arlen Soderquist

Attorney, Agent, or Firm—Lerner, David, Littenberg, Krumholz & Mentlik

[57] **ABSTRACT**

The isotopic composition of a multiatomic isotope-bearing species such as CO_2 in an analyte is measured by maintaining the analyte in a condition such that isotope-bearing species are present in an excited state and directing light at wavelengths corresponding to transition energies of isotope-bearing species with different isotopes. The interaction between the analyte and light at the different wavelengths is monitored, as by monitoring the optogalvanic effect caused by the light of the different wavelengths. The light may be supplied by a laser including the isotope-bearing species. A stable isotope such as ^{13}C or ^{18}O can be used as a tracer in a chemical or biological test and detected using the composition-determining method.

9 Claims, 2 Drawing Sheets