



- [54] **METHOD AND SYSTEM FOR MEASUREMENT OF MACULAR CAROTENOID LEVELS**
- [75] Inventors: **Paul S. Bernstein; Werner Gellermann; Robert W. McClane**, all of Salt Lake City, Utah
- [73] Assignee: **The University of Utah Technology Transfer Office**, Salt Lake City, Utah
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Primary Examiner—Brian Casler  
 Attorney, Agent, or Firm—Workman, Nydegger & Seeley

[57] **ABSTRACT**

The present invention is directed to a new and useful method and apparatus for use in determining the levels of macular pigments in the tissue of live subjects. Specifically, the method and apparatus of the present invention provide a non-invasive, rapid, and objective determination of the macular carotenoid levels, and in turn, offer valuable diagnostic information applicable to large populations. The present invention measures the levels of macular carotenoid pigments, as well as other retinal materials. Monochromatic laser light is projected onto a retina, preferably in the macular area. A very sensitive detection system then detects light scattered from the retina. The majority of the light is scattered elastically at the same wavelength of the laser in a manner known as Rayleigh scattering. A very small fraction of laser light is scattered inelastically at a wavelength different from that of the laser in a manner known as Raman scattering. The Raman scattered light is selected and then routed to a detection system, wherein the results are calibrated against actual standards for the particular retinal material being tested.

**32 Claims, 5 Drawing Sheets**

