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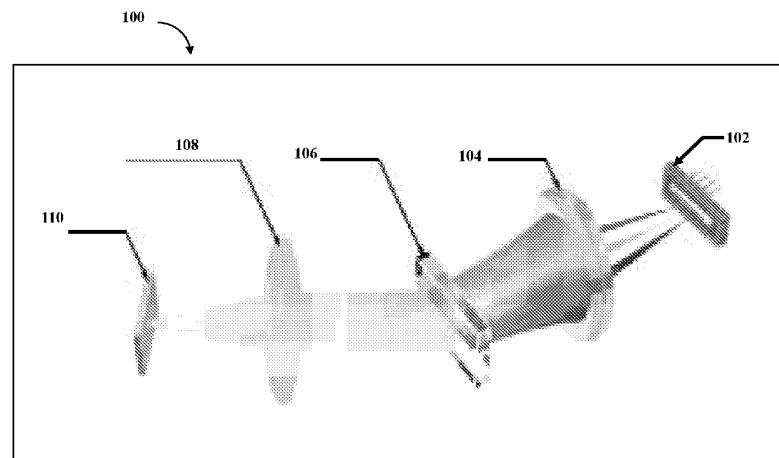


Figure 1

(57) Abstract: The present disclosure discloses an apparatus for determining characteristics of a fluid. The apparatus includes a visible light producing LED array, an optical system, and a microcontroller. In the apparatus, the visible light producing LED array emits light and produces a light beam for irradiating an object. Further, in the apparatus, the optimal system includes a grating to receive irradiated light from the object through a collimator and disperse the light into wavelengths, a focusing lens and a linear image sensor arranged at a focal plane of the focusing lens to convert the light by the grating and focused by the focusing lens, into electrical signals. Lastly, in the apparatus, the microcontroller is connected to the sensor and processes the electrical signals and communicates for processing.

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