

ABSTRACT

A light branching unit (31) and a reflecting mirror (32) are fixed to a barrel (12) in a state where the distance between the members is maintained constant. And, a laser beam from a light source is guided to the light branching unit via an optical fiber (33), separated into a measurement beam and a reference beam by a beam splitter, and a synthesized light of the measurement beam and the reference beam that reciprocate between the light branching unit and the reflecting mirror in the liquid (Lq) is then guided to a photodetection system via the optical fiber. And, the measurement beam and the reference beam are made to interfere inside this photodetection system, and a change of an optical path length of the measurement beam is measured based on a photoelectric conversion signal of the interference light. Accordingly, change of a refractive index of the liquid can be optically measured.