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(54) **METHOD AND SYSTEM FOR MEASURING OPTICAL SCATTERING CHARACTERISTICS**

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(51) **Int. Cl.**[7] **G01N 21/00**

(52) **U.S. Cl.** **356/73.1**

(58) **Field of Search** 356/73.1

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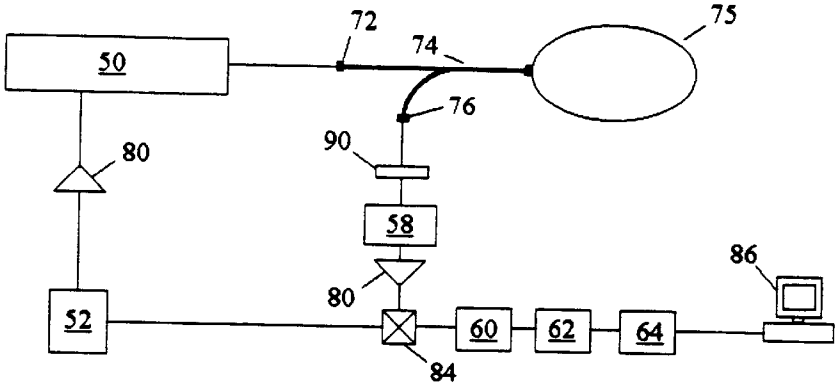
(57) **ABSTRACT**

A method and system for measuring optical scattering characteristics includes coupling a continuous wave laser excitation signal to an optical fiber. Radiation backscattered by the optical fiber in response to the coupled excitation signal is detected to produce a backscattered radiation signal. The backscattered radiation signal is mixed with the excitation signal to produce a mixed signal. The mixed signal is filtered to reduce the magnitude of frequencies other than conjugate mixing frequencies relative to the conjugate mixing frequencies. The filtered signal is digitized and the magnitude of backscattered radiation from a specific portion of the fiber is calculated based on the digitized signal. The temperature of a specific portion of the fiber can be determined from the magnitude of the backscattered radiation.

11 Claims, 6 Drawing Sheets



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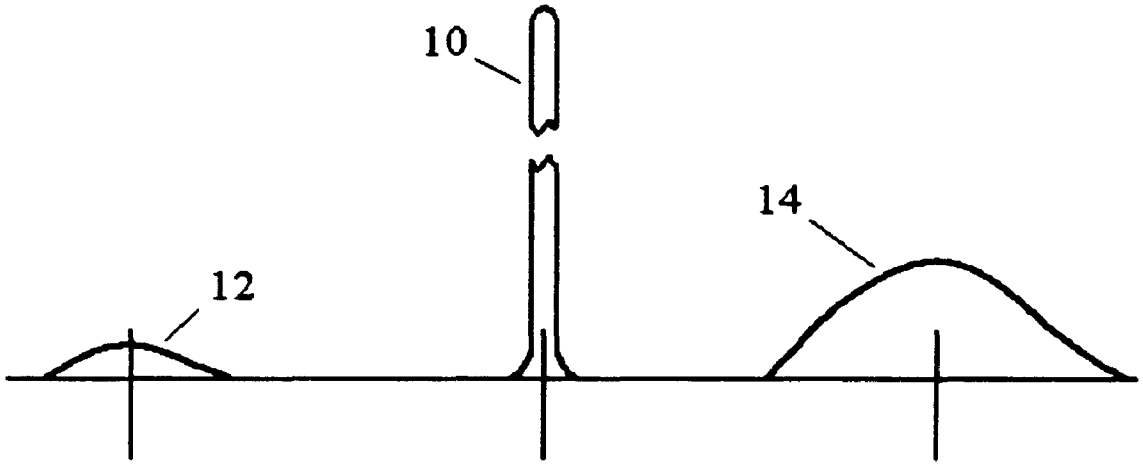

Fig 1

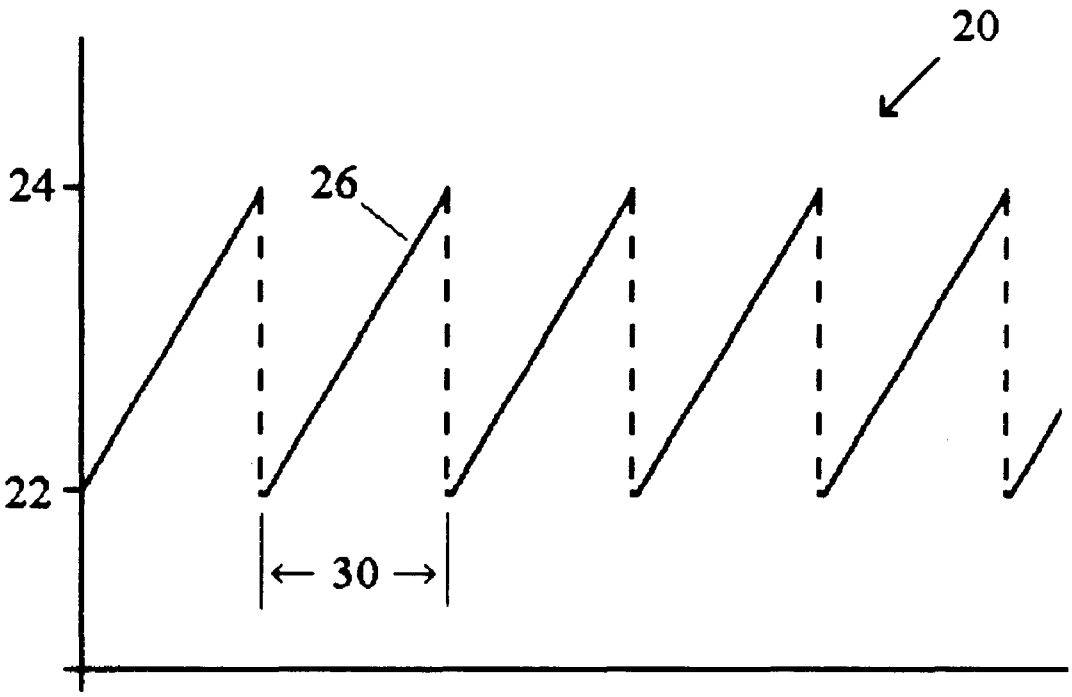

Fig 2

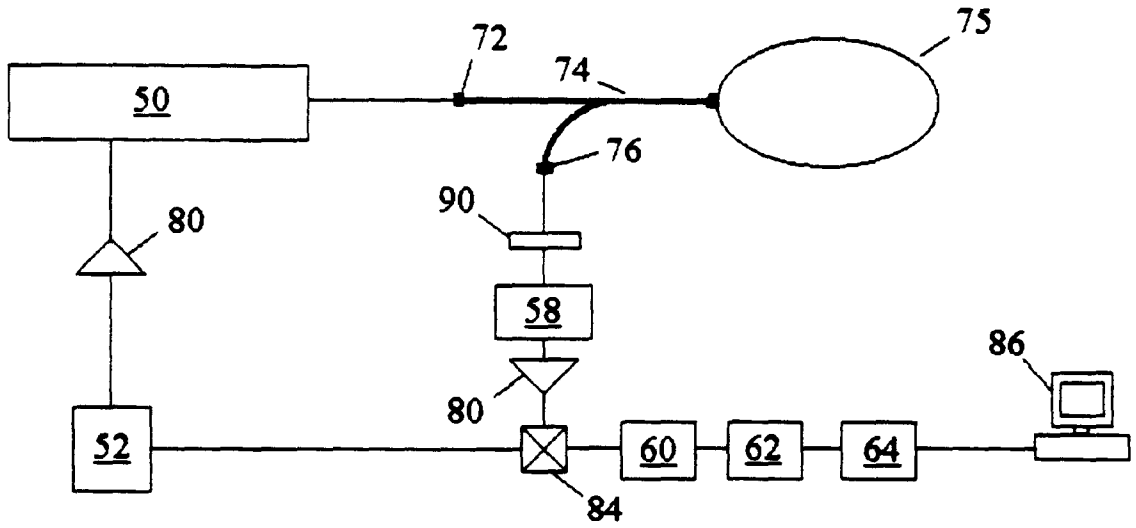

Fig 3

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