A Novel Temperature-Insensitive Hydrostatic Liquid-Level Sensor Using Chirped FBG

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***Abstract*—A novel half-bonded chirped fiber Bragg grating on a natural rubber diaphragm has been proposed to enhance the sensitivity and to compensate the temperature effects of a hydrostatic liquid-level sensor. This innovative fabrication method is resulted in the narrowing of the bandwidth with the hydrostatic pressure sensitivity recorded at −253 pm/kPa and water column sensitivity at −0.0253 nm/cm. The band-width modulation measurement was insensitive to temperature variations when compared with center wavelength modulation measurement. Furthermore, the proposed hydrostatic liquid-level sensor is compatible with a low-cost photodetector.**

***Index Terms*—Chirped fiber Bragg grating, hydrostatic pressure, liquid level, temperature compensation.**