

# WIRELESS THERMAL BUBBLE ACCELEROMETER ON A FLEXIBLE SUBSTRATE

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## Abstract

This paper proposes an innovated method to integrate an active RFID tag with a thermal bubble accelerometer on a flexible substrate, thus it can become a wireless acceleration sensor for easy usage. In this paper a semi-cylindrical chamber filled with Xe (xenon) gas is proposed to replace the original rectangular with CO<sub>2</sub>. Comparing the response times (32G) are also made; we note the response time with Xe gas is about 51.6 of CO<sub>2</sub>. On the other hand, comparisons of sensitivity and response time are also made with semi-cylindrical chamber; note the sensitivity with CO<sub>2</sub> is better at lower G's, but the performances are degraded above 18G and even lower than with Xe above 28G. We see the response times (32G) with Xe is about 20.2 of CO<sub>2</sub>. Besides, the response speed is doubled with Xe by using semi-cylindrical chamber instead of the rectangular one.

Keyword : RFID-based; thermal bubble accelerometer;