Abstract

Nowadays people are interested in the photoacoustic microscopy to study biological samples(Like, tissues). In such kind of studies, there is no need to take samples(cells or tissues) out from the living being. Generally, people use material based sensors to detect the photoacoustic signals. But there are lots of limitations (i.e. lack of large bandwidth, small size, sensitivity, high-frequency sensing) in such kind of sen sors. Besides these reasons, material based sensors are easily affffected by the environ ment(i.e. temperature, electromagnetic interference). So, there is a high probability to get noisy signals. Due to those reasons, people are interested to develop optics based high-frequency photoacoustic sensor. Here, we have used the Mach-Zehnder interferometric technique and the beam deflflectometry technique to detect the MHz range high-frequency ultrasound signal. We have also proposed a new experimental setup to detect the ultrasound signal using inline Mach-Zehnder interferometer with a single wide beam. In this proposed setup, we have observed interference and the beam deflflection due to the ultrasound wave simultaneously. Besides this, we have also described some optical fifiber based sensor fabrication which can able to detect the ultrasound signals.