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Title:	High-frequency ultrasound signal detection using light
Authors:	Majumder, Ayan (/jspui/browse?type=author&value=Majumder%2C+Ayan)
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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 affected 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 deflectometry 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 deflection due to the ultrasound wave simultaneously. Besides this, we have also described some optical fiber based sensor fabrication which can able to detect the ultrasound signals.
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