Bangalore scientists develop real-time breath monitoring device which can detect asthma, sleep apnoea

Breath pattern of an individual is an important indicator of diseases like asthma, sleep apnoea, but devices for real-time monitoring are not readily available.

Scientists from Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru, have fabricated an ultrafast humidity sensor named 'Breath RHgram,' which can efficiently sense the breath pattern of an individual and perform real-time monitoring of breath.

Online monitoring of breath has gained a lot of attention recently as the breath pattern of an individual provides important information on the person's health condition. Monitoring the breath pattern can help in detecting different diseases like asthma, sleep apnoea, and so on. Given the time scale involved with breathing, the sensor needs to be fast in both response and recovery. At present, such devices are not readily available.

Prof. G U Kulkarni and his co-workers from CeNS, an autonomous institute of the Department of Science and Technology (DST) have fabricated an ultrafast humidity sensor with response and recovery time of around 10-20 milliseconds and successfully integrated into a small stand-alone pen-drive size device which can efficiently sense the breath pattern.

Mr. Suman Kundu, the Ph.D. Scholar who is working on this project, said, "This device can perform real-time monitoring of breath using open-source software installed on a smartphone."

The device will be able to measure the humidity content of the breath, flow profile, and the rate, which closely relate to the subject's metabolism. The device can also be used to measure the hydration level of any object by simply keeping it closer to the sensor. When a finger is placed on the device, the hydration level of the finger can be also monitored using the smartphone.

Several prototypes of the device have been supplied to researchers and medical practitioners both from within and outside the country. The prototypes are available for onsite testing and validation purposes.