

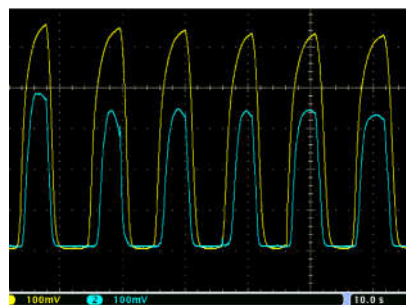
Breath RHgram



Characterizing exhaled breath has become a simple yet powerful non-invasive method of diagnosing diseases such as asthma, cancer, diabetes etc. Any serious monitoring of exhaled breath should be an online process tracking the changes in every breath cycles; offline trace gas analysis suffers from inherent problems associated with sample preparation and storage, contamination, chemical transformation of the analytes, etc. While monitoring analytes for specific diseases is important, monitoring humidity itself may throw some light on individual's health, say, dehydration level.

Here, we exhibit the online monitoring of breath patterns of a volunteer using a ultrafast humidity sensor. The technology is based on sensitive detection of electrical signals in supramolecular nanowires, which respond to humidity changes over a wide range with millisecond response times; thus, this is the fastest device ever made.

The respiratory monitoring of breath patterns from both the nostrils simultaneously, is important in the contexts of nasal blockage, congestion, nasal septum deviation etc. The humidity measured from exhaled breath provides an insight into hydration levels of the individual, something vital during dehydration conditions caused by exhaustion, diarrhea etc, Importantly, this device is one of its kind, meant to measure respiratory rate directly.



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