

# **Volatile Organic Compounds as Potential Biomarkers for Noninvasive Disease Detection by Nanosensors: A Comprehensive Review**

## **Abstract**

Biomarkers are biological molecules associated with physiological changes of the body and aids in the detecting the onset of disease in patients. There is an urgent need for self-monitoring and early detection of cardiovascular and other health complications. Several blood-based biomarkers have been well established in diagnosis and monitoring the onset of diseases. However, the detection level of biomarkers in bed-side analysis is difficult and complications arise due to the endothelial dysfunction. Currently single volatile organic compounds (VOCs) based sensors are available for the detection of human diseases and no dedicated nanosensor is available for the elderly. Moreover, accuracy of the sensors based on a single analyte is limited. Hence, breath analysis has received enormous attention in healthcare due to its relatively inexpensive, rapid, and noninvasive methods for detecting diseases. This review gives a detailed analysis of how biomarker imprinted nanosensor can be used as a noninvasive method for detecting VOC to health issues early using exhaled breath analysis.

## **Keywords**

Array-technology; Breath Analyzer; Health Complications; Nanosensor; Organic Molecule