

IIT Jodhpur brings first 'Make in India' sensor for alcohol detection through breath monitoring

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Volatile organic compounds in exhaled breath samples can act as biomarkers to identify alcohol content and various diseases

The Indian Institute of Technology (IIT) Jodhpur researchers have developed the first 'Make in India' human breath sensor based on metal oxides and nano silicon operating at room temperature.

The device's primary function is to measure alcohol content in the breath in drunk and driving cases. However, with some changes in sensing layers and the use of an array of sensors (for Electronic Nose or Artificial Nose), and data analytics, it can also be very useful for characterisation of diseases, such as asthma, diabetic ketoacidosis, chronic obstructive pulmonary disease, sleep apnea, and cardiac arrest, where the person's breath volatile organic compounds (VOC) are monitored.

There was a greater need for the development of a quick, affordable, non-invasive health monitoring device, given the growing concerns about the adverse impact of air pollution on human health and the environment. The existing sensors are based on fuel cell-based technology or metal oxide technology. Hence, it motivated the researchers to take up the work and develop a breath VOC sensor whose cost will be less than the existing fuel cell technology-based device. In similar lines, the team has developed a breath monitoring sensor based on partially reduced graphene oxide.

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