

Introduction

Cancer burden in Malaysia is increasing. Although there have been improvements in cancer diagnosis, these new detection method may potentially cause an exponential increase in the cost of cancer treatment. Therefore, we propose a Lung Cancer Detection system which is a hybrid breath test and case-based reasoning system incorporates patient models to help multivariate analysis information in order to make diagnose decisions inexpensively accurately and rapidly. A portable breath collection apparatus the zNose Vapor Detector and Analyzer was employed to capture a breath test sample of lung cancer patient, the concentration of chemicals in the vapor is determined. In the training dataset artificial intelligent tool support vector machines served as data mining engine; using the case based reasoning cycle two prediction values is determined, one for lung cancer and zero for no disease.

Objective

- To detect volatile organic compounds (VOCs) with the breath test of patient by Znose in 10 seconds or less;
- To provide a recognizable visual image of specific vapor mixtures (fragrances) containing possibly hundreds of different chemical species near real time;
- To perform multivariate analysis of the data through the use of artificial intelligent tools, predict lung cancer successfully.

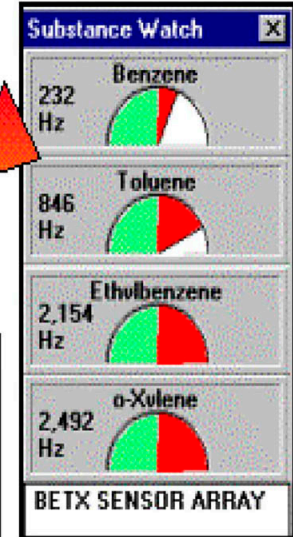
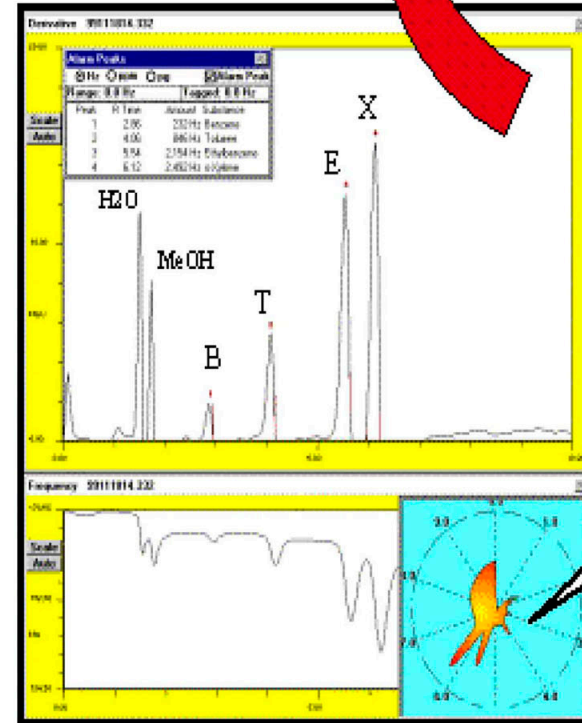


zNose Model 4200 (Handheld Unit)

The zNose™ Model 4200 Vapor Detector and Analyzer is a handheld gas chromatograph that uses a SAW detector, fast GC column, and internal sampling pump and preconcentrator. Within 10 seconds, the zNose™ Model 4200 captures a vapor sample, injects and passes it through a GC column, and determines the concentration of chemicals in the vapor. The zNose™ Model 4200 is designed for maximum flexibility and applications requiring quick and accurate vapor screening in the field.

Illustration of Experiment Results

Define a 4 element BTEX Sensor Array



VaporPrint™ IMAGE (Sensor Output)