

The Use of Polymer Based Gas Sensor for Detecting Formalin in Food Using Artificial Neural Network

Title	The Use of Polymer Based Gas Sensor for Detecting Formalin in Food Using Artificial Neural Network
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Abstract	<p>The usage of formalin as preservative substance in food is dangerous and make much threat to public society. Yet, it is difficult to identify the presence of formalin in food sensory. It commonly requires laboratory-based testing to detect the formalin. This work describes a detector system of formalin presence in food which employs a series of polymer-based gas sensor and uses a neural network detection method. The sensors are the polymer-carbon composite which made of the polymer mixed with active carbon. There are four types of polymer used, i.e. Polyethylene Glycol (PEG) 6000, PEG200, PEG20M, and PEG1450. The polymer-carbon composite provided a unique characteristic when it is exposed to vapor of food with or without formalin. The resistance of each polymer is different for each detected vapor. The combination of those sensors gives a pattern of voltage output on the sensors when they are exposed certain gas so that every gas has its unique output pattern. The method of detection uses an algorithm of back-propagation of the neural network. That voltage pattern of sensors serves as input to an artificial intelligence program. The result shows that the system has the accuracy of 75% in detecting formalin in food.</p>
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