Abstract

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Electronic Nose System and Artificial IntelligentTechniques for Gases Identification

Electronic nose is the intelligent design to identify food flavors, cosmetics and different gas odors, depending on sensors. The continuous developing of these sensors permit advanced control of air quality, as well as, high sensitivity to chemical odors. Accordingly, a group of scientists have worked on developing the properties of sensors, while others have modified ways of manufacturing ultra low-cost design (Josphine & Subramanian , 2008) (Wilson et al., 2001). In the design of an electronic nose, sampling, filtering and sensors module, signal transducers, data preprocessing, feature extraction and feature classification are applied. (Getino et al., 1995) is used as an integrated sensor array for gas analysis in combustion atmosphere in the presence of humidity and variation in temperature from 150-350oC. The sensor array exposed to a gas mixture formed by N2, O2, CO2, H2S , HCL and water vapour with a constant flow rate of 500 ml/ min was studied. (Marco et al., 1998). The gas identification with tin oxide sensor array is investigated, in addition, the several undesirable characteristics such as slow response, non-linearties, long term drifts are studied. Correction of the sensor's drift with adaptive self organizing maps permit success in gas classification problems.(Wilson et al., 2001) is introduced as a review of three commonly used gas sensors which are, solid state gas sensor, chemical sensors and optical sensors. Comparisons are deducted among them in terms of their ability to operate at low power, small size and relatively low cost with numerous interference and variable ambient conditions.(Dong Lee & Sik Lee, 2001) depended on solid state gas sensor, thus the pollutants of environment are controlled relative to the sensing mechanism, the sensing properties of solid – state gas sensors to environmental gases, such as No, Co and volatile organic compounds.(Guardado et al. , 2001) is used as a neural network efficiency for the detection of incipient fault in power transformers. The NN was trained according to five diagnosis criteria and then tested by using a new set of data.