

ABSTRACTS

This research consists in the development of a new technique capable of the identification of polymeric materials using an electronic nose. Electronic noses have been developed for automatic detection and classification of odors, vapors and gases. They are instruments capable of measuring the concentration or intensity of an odorant similarly to an olfactometer, but without the inherent limitations of the human panel, which is highly desired. The electronic nose is composed by a system of chemoresistive sensors, in this case, an array of four sensors was used, which were made through a deposition of thin films of doped conductive polymers, on the surface of interdigitated electrodes. These sensors were connected to conductivity meters coupled to a personal computer (PC) through AD converters. The PC had acquisition and data processing softwares installed on it . Thirty readings were made for each analyzed polymer consisting of alternated 5 seconds exposure periods and 45 seconds recovery periods. The collected data were statistically processed by "Principal Component Analysis"(PCA). This electronic nose was efficient, being able to identify nine types of polymeric materials through the analysis of the different volatile compounds released when these materials were heated to the heat of 257°C. A 100% correct classification score was obtained in the 30 sets of analysis.

Keywords: Electronic nose, gas sensors, chemoresistive sensors, characterization of polymers.