

Response Evaluation of Electronic Nose with Polymer-Composite and Metal Oxide Semiconductor Sensor towards Microbiological Quality of Rapeseed

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Abstract : Rapeseeds were evaluated and classified by the static-headspace sampling method using electronic noses during the 25 days spoilage period. The Cyranose 320 comprising 32 polymer-composite sensors and VCA (Volatile Compound Analyzer - made in Institute of Agrophysics) built of 8 metal-oxide semiconductor (MOS) sensors were used to obtain sensor response ($\Delta R/R$). Each sample of spoiled material was divided into three parts and the degree of spoilage was measured four ways: determination of ergosterol content (ERG), colony forming units (CFU) and measurement with both e-noses. The study showed that both devices responsive to changes in the fungal microflora. Cyranose and VCA registered the change of domination microflora of fungi. After 7 days of storage, typical fungi for soil disappeared and appeared typical for storeroom was observed. In both cases, response $\Delta R/R$ decreased to the end of experiment, while ERG and JTK increased. The research was supported by the National Centre for Research and Development (NCBR), Grant No. PBS2/A8/22/2013.

Keywords : electronic nose, fungal microflora, metal-oxide sensor, polymer-composite sensors

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