



## INTISARI

### **VARIASI DEBIT ALIRAN TERHADAP RESPON AROMA TEH HITAM BERBASIS *ELECTRONIC NOSE***

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Telah berhasil dilakukan pengujian variasi debit aliran untuk mendapatkan respon sensor yang optimal dari aroma sampel tiga jenis teh hitam beda kualitas menggunakan *e-nose* dinamis berbasis sensor gas MOS. Teh hitam dari jenis BOP, kualitas 1 (KW 1), BP II kualitas 2 (KW 2) dan Bohea kualitas 3 (KW 3) masing-masing 50 gr sebanyak 81 kantong diukur aromanya dengan variasi debit aliran dari 1 – 5 L/menit dengan kenaikan 0,5 L/menit, suhu konstan 40 °C, *flushing* 150 detik, *collecting* 120 detik dan *purging* 80 detik selama 10 siklus secara bergantian. Respon sensor yang dihasilkan kemudian diproses dengan manipulasi *baseline* menggunakan metode diferensial. Setelah itu diolah dengan menggunakan fitur ekstraksi integral kemudian data matriks dimensi tinggi direduksi menjadi data matriks dua dimensi dengan metode PCA tanpa menghilangkan informasi-informasi penting. Hasil eksperimen menunjukkan data dengan varian data terbesar 3,5 pada debit aliran optimal sebesar 100% total varian data dan klasifikasi ketiga sampel dapat dilakukan dengan jelas.

Kata kunci : Hidung elektronik, debit aliran udara, respon sensor, teh, PCA



## ABSTRACT

Variations of the flow rate to get the optimal sensor response from three different quality types of black tea aroma. Samples using dynamic *e-nose* based on MOS gas sensor has been studied. The types is BOP, quality 1 (KW 1), quality 2 of BP II (KW 2), and quality 3 of Bohea (KW 3). The aroma from 81 bags which each consist of 50 gr tea were measured by varying of its flow rate. The rates started from 1-5 L/min with an increase of 0.5 L/min, using constant temperature at 40°C, flushing 150 seconds, collecting 120 seconds, and purging 80 seconds for 10 cycles alternately. The result were processed by baseline manipulating using differential methods and then by an integral extraction feature. The high dimensional matrix data were reduced into the two-dimensional matrix data by PCA methods without omitting the important information. Experiment results showed that the largest variance data was at 3.5 on the optimal flow rate of 100% from variant data totals and the classification of three samples can be made clearly.

*Keywords: Electronic nose, air flow system, response sensors, tea, PCA*