

Application of Flavor Sensor to Coffee

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SUMMARY

To carry out a pattern analysis of odour, an odour analysis system with a human sense of smell was developed by using unique metal oxide semiconductor sensors (four kinds of SnO₂ and two kinds of ZnO). Elements of an odour to human include six substance of nitrogen, sulphur, hydrocarbon, hydrogen, oxygen, and aromatic compounds. They can be sensed by six types of semiconductor respectively. This newly developed system can detect odour quality by the shape of hexagon graphs which are formed by depending on responses of six sensors. Measurement of many types of odour indicated that pleasant odours to human have a hexagon graph like a fountain pen lip. The system was applied to the discrimination of roasted coffees. Hexagon graphs of coffees looked like a fountain pen tip, but identification of coffees with hexagon graphs was difficult due to complexity and the resemblance of their aromas. The principal component analysis of sensor's outputs can characterise several origins of coffee. The sensor's output had a high correlation to roasting level and to outputs of gas chromatography.