

Odorous Material Detection and Approach to its Discrimination by Semiconductor Gas Sensors

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To construct an artificial device for discriminating between various odors, commercially available semiconductor gas sensors were used as the transducers for odors, and their efficiency for the measurement of various odorous materials was tested. We constructed an instrumental device, the odor identification system, for experimentally discriminating between various odorous materials. The selectivity constant (α) and the sensitivity characteristic (G) were used as an index to describe odors. The odor identification system completely discriminated the various odorous materials tested, based on the interpretation of six pentagrams of selectivity constants and a line graph depicting sensitivity characteristics measured under six different heater voltages for the respective gas sensors. From the experimental results, it was suggested that a wide range of odorous materials was efficiently detected and discriminated by the device using semiconductor gas sensors.

1. Introduction

The adsorption of odorous materials flowing into the nasal cavity on the receptor cells of the olfactory epithelium produces a change in the ionic permeability of