

Fabrication of Odor Sensor Surface Recognizing Substructure of Odorant

Yu Sasaki, Kenshi Hayashi* and Kiyoshi Toko

Kyushu University, 744 Motooka, Fukuoka 819-0395, Japan

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In biological systems, odor receptors receive odor molecules by recognizing molecular information. Recent studies have shown that the size and electrical dipole of molecules are important for odor reception. We developed an odor code sensor that recognizes essential molecular information for reconstructing the odor code of odor molecules. The substructure of odor molecules is a candidate target property of a developed odor code sensor. The substructures of odorants are received at the sensor surface; therefore, the design of surface functionality is important. In this study, a self-assembled monolayer (SAM) was used to construct a nanospace that fits the substructure of odor molecules. A surface that can recognize substructures was fabricated by the mixed SAM method. A competitive method and a replacement method were examined for SAM surface preparation. The mixed SAMs obtained were analyzed by contact angle measurement, ellipsometry, and an electrochemical method. Finally, the surface was evaluated through odorant responses, and the specificity to odorants was confirmed.

*Corresponding author: e-mail: hayashi@ed.kyushu-u.ac.jp