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Highly Sensitive Detection of TNT Using a Poly(amidoamine) Dendron-Based SPR Immunosensor

Yutaka Mizuta^{*}, Takeshi Onodera¹, Praveen Singh², Kiyoshi Matsumoto³, Norio Miura⁴ and Kiyoshi Toko¹

Graduate School of Information Science and Electrical Engineering, Kyushu University, 744 Motooka, Nishi-ku, Fukuoka-shi, Fukuoka 819-0395, Japan
¹Faculty of Information Science and Electrical Engineering, Kyushu University, 744 Motooka, Nishi-ku, Fukuoka-shi, Fukuoka 819-0395, Japan
²Biophysics and Electron Microscopy Section, Indian Veterinary Research Institute, Izatnagar, Bareilly 243-122, India
³Faculty of Agriculture, Kyushu University, 6-10-1 Hakozaki, Higashi-ku, Fukuoka-shi, Fukuoka 812-8581, Japan
⁴Art, Science and Technology Centre for Cooperative Research, Kyushu University, 6-1 Kasuga-kouen, Kasuga-shi, Fukuoka 816-8580, Japan

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In this paper, we describe the fabrication of novel poly(amidoamine) (PAMAM) dendron-based Surface Plasmon Resonance (SPR) sensor chip surfaces supported by a self-assembled monolayer (SAM) of alkanethiol and their use in the highly sensitive detection of 2,4,6-trinitrotoluene (TNT), which is one of main components of explosives. The fabricated surfaces showed excellent binding capacity for TNT antibodies; this is probably due to the fact that the highly branched functional groups and three-dimensional structure of dendron molecules offer densely arranged binding sites and improve binding efficiency. A limit of detection (LOD) of ca. 15 ppt (pg ml⁻¹) was achieved by inhibition assay.

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