



Development of thin-film type sensors to measure human locomotion



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Abstract

Free-standing polymer thin films with a thickness of 10 to several hundred nanometers can be easily prepared by the application of printing technology and have a unique property that they can be applied to biological surfaces without using adhesives or glues because of their very low bending rigidity and high by intermolecular force due to surface contact. In our laboratory, we have developed thin film sensors that can image temperature, pH, or oxygen distribution on biological surfaces in real time by stacking thin films of different functional fluorescent molecules. Here, I will introduce the composite thin films of PEDOT: PSS and elastomer as skin-contact electrodes for electromyography during exercise, electrocardiogram during bathing, and a tactile sensor attached to the indicating finger. The polymer thin film-type sensors for bio-applications would be attractive to collect bioinformation unperceivably as more advanced wearable devices.

Biography

1991 Dr. Eng., Maj. Appl. Chem., Grad. Sch. Sci. & Eng., Waseda Univ.,

1990-1991 Fellow, JSPS, 1991-1993 Res. Assoc. (Waseda U.), 1993-1994 Assis. Prof. (Waseda U.), 1995-2004 Assoc. Prof. (Waseda U.), 1998-1999 Visiting Fellow, U. Penn. Sch. Med., USA

2005-, Professor of Faculty of Science and Engineering, Waseda University (2005-2007 Dept. Applied Chem., 2007-Dept. Life Sci. and Med. Biosci., 2010- Joint Maj. Adv. Biomed. Sci. Tokyo Women's Med. Univ. & Waseda Univ.) 2020-24, Director of TWIns (Tokyo Women's Medical University-Waseda University Joint Institution for Advanced Biomedical Sciences)

Editors of Polym. Adv. Technol., MRS Commun., Front. Bioeng. & Biotech.,

Okuma Award (2011, Waseda U).

*** ALL ARE WELCOME ***

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