Development of Screen-printed Electrochemical Devices for Printable Electrochemistry

Isao SHITANDA,
Yoshinao HOSHI and Masayuki ITAGAKI

Department of Pure and Applied Chemistry,
Faculty of Science and Technology,
Tokyo University of Science, 2641, Yamazaki, Noda-shi,
Chiba 278-8510, Japan.
E-mail address: shitanda@rs.noda.tus.ac.jp (I.Shitanda).

Recently, we name the **Printable Electrochemistry** for the development field of printable electrochemical devices.

There has been a considerable recent interest in screen-printed devices. Screen-printing technique has following merits: (a) drawing precise pattern of μm order, (b) a wide variety of inks, (c) high reproducibility, and (d) low cost.

In the present study, we introduce and display the several screen-printed devices, for example, as follows.

(1) Microelectrochemical cell[1]
(2) Planar Type Solid-state Ag/AgCl Reference Electrode with super long-term stability[2]
(3) Whole-cell biosensor for environmental water monitoring[3]
(4) Paper-based chromatographic biosensor
(5) Biofuel cell
(6) Dye-sensitized solar cell[4]
(7) Air-battery
(8) Lithium-ion secondly battery
(9) Corrosion monitoring sensor[5]
(10) Dissolved oxygen sensor

References

1. I. Shitanda, T. Irisako, M. Itagaki, *Sens. Actu. B-Chem*, **160**, 1606 (2011).
2. I. Shitanda, H. Kiryu, M. Itagaki *Electrochim. Acta*, **58**, 528 (2011).
3. I. Shitanda, S. Takamatsu, K. Watanabe, M. Itagaki, *Electrochim. Acta*, **54**, 4933 (2009).
4. M. Itagaki, Y. Nakano, I. Shitanda, K. Watanabe, *Electrochim. Acta*, **56**, 7975 (2011).
5. I. Shitanda, A. Okumura, M. Itagaki, K. Watanabe, *Sens. Actu. B-Chem*, **139**, 292 (2009).