

Novel Solid State Reference Electrode using the Nanoporous Pt

Jongmin Noh¹, Sejin Park², Taek Dong Chung³, Hee Chan Kim⁴

1. Interdisciplinary Program, Bioengineering Major, Graduate School, Seoul National University,
2. Nomadien Corporation, Seoul 151-050, Korea
3. Department of Chemistry, Seoul National University, Seoul 151-742, Korea
4. Institute of Medical & Biological Engineering, Medical Research Center, Seoul National University, Seoul 110-744, Korea

E-mail : jongmin5@snu.ac.kr

This research reports a novel solid-state reference electrode based on the nanoporous platinum (Pt) thin film, which is an important electrode for electrochemical experiment. The structure of solid-state reference electrode within a microchip enables stable reference potential to be performed successfully. This is expected to be a competitive alternative to the electrochemical measurements currently used in conventional Ag/AgCl reference electrode. The new solid-state reference electrode on a microchip maintained a reproducible potential versus a commercial Ag/AgCl reference electrode for a long time. This solid-state reference electrode was successfully used to monitor pH in 0.1M PBS buffer (pH 7.0). The advantage of the new design chip was high sensitivity and stability to concentration change, compact size, no hysteresis, even under repeatedly changing experiment conditions. Also, these systems have a quick hydration and detection time. As a result, we obtained a good disposable solid-state reference electrode.

References

- [1] Sejin Park, Taek Dong Chung, Hee Chan Kim, *Anal Chem*, 2003, 75, 3046-3049