

Electroanalytical systems using track-etched microporous membrane electrodes

Associate Professor Hitoshi Mizuguchi

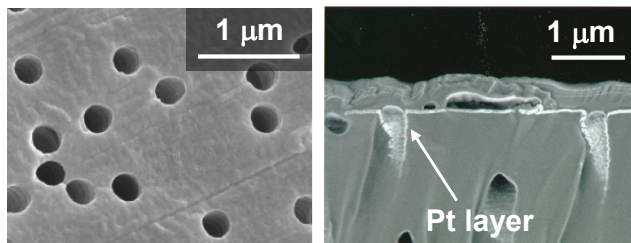


Fig.1 SEM images of track-etched microporous membrane electrode. Surface of the electrode (left), and cross sectional view (right).

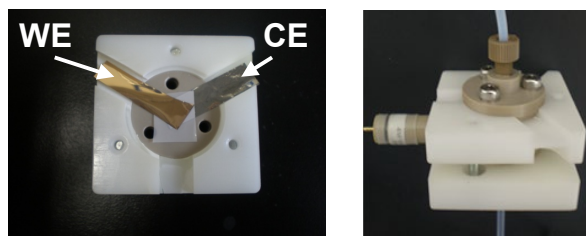


Fig.2 Structure of the proposed flow cell

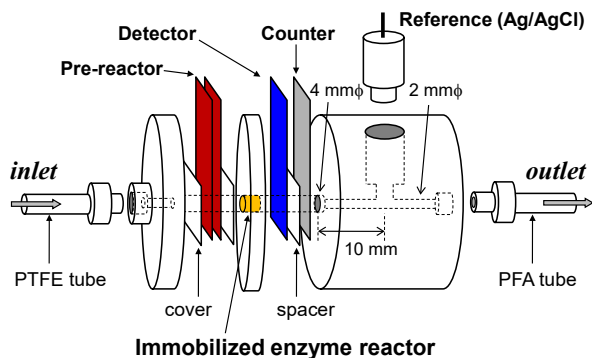


Fig.3 Amperometric enzyme biosensor

Content:

We recently reported an electrochemical flow cell in which the track-etched microporous membrane electrodes had been mounted. The electrode was prepared by sputter deposition of platinum or gold on the track-etched microporous membrane filters. The coatings were produced on the smooth flat surface and entrance of the cylindrical pores. Sample solution flows through the membrane filter while performing electrolysis. In this case, the sample solution flows through the cylindrical pores of the electrodes (Fig.1). The electrode enables efficient electrolysis in a flow condition. This property would be attributed to the limitation of growth of the diffusion layer at the entrances of pores. Various analytical systems can be built merely by piling up the track-etched microporous membrane electrodes which have a 10 μm thickness (see Fig.3). Although many researchers have investigated for quantitative electrolysis, the simplicity and flexibility of arrangement of electrodes as well as high efficiency of electrolysis is the greatest feature of the track-etched microporous membrane electrodes.

Keywords: track-etched membrane,
biosensor, flow-based analysis

E-mail: mizu@tokushima-u.ac.jp

Tel. +81-88-656-7419

HP : <http://www.chem.tokushima-u.ac.jp/B1/index.html>

