

Supported Phospholipid Monolayers on Hg Film Electrodes for On-line Biomembrane Activity Studies

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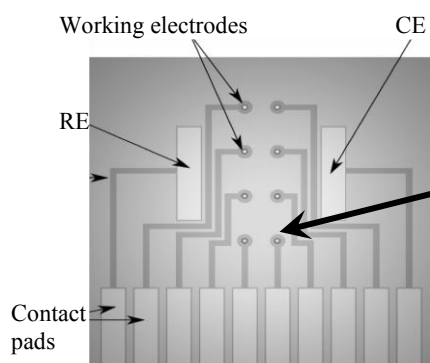
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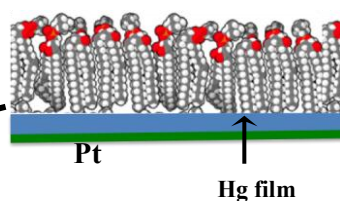
Abstract

The phospholipid monolayer on a mercury (Hg) electrode is a classic supported biomembrane model for various biomembrane researches, e.g. ion channel peptide screening, nanoparticle toxicity, etc. Phospholipids form well oriented, yet fluid monolayers on the Hg electrode which resemble the outer leaflet of phospholipid bilayer vesicles. The advantages of this system come from the unique properties of Hg, i.e. its smooth liquid surface, hydrophobicity and conductivity, which make it highly compatible with the fluid phospholipids. Recently, a chip-based device with Hg film on Pt microelectrodes has been designed to improve the mechanical stability, portability and accesibility without compromising the properties of the phospholipid monolayer. This talk will demonstrate two important applications of these Hg film microelectrodes:

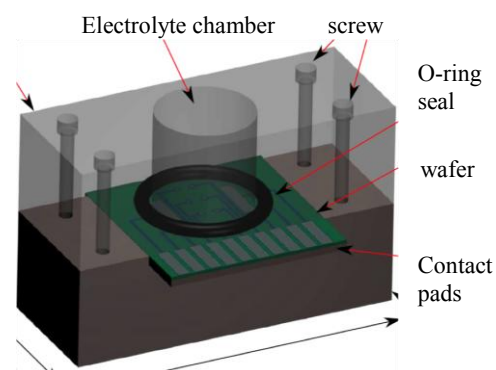
- (i) the biomembrane activity of nanoparticles, i.e. SiO_2 , ZnO , in relation to their toxicity;
- (ii) the monolayer activities of pH-mediated amphiphilic polymers for drug-delivery.



(a) Wafer based device (WBD)



(b) Phospholipids monolayer on Pt/Hg electrode



(c) Flow cell