은 표면의 이중지질막을 사용한 Cu(Ⅱ) 이온 농도 측정용 미세유체시스템의 제작

정범승, 김도현*
한국과학기술원 생명화학공학과, 초미세 화학공정 시스템 연구센터
(DoHyun.Kim@kaist.ac.kr*)

Silver-supported self-assembled bilayer lipid membrane(s-BLM) was obtained by immersing silver wire into lipid solution(phosphatidyl choline 2.5mg in normal hexane 1ml) for 7~10 minutes and then dipping into aqueous KCl solution. This s-BLM was used as electrode at the circuit to know the relation between Cu(II)ion concentration and current crossing s-BLM in this research. Though the relation has the excellent linearity, the reproducibility was somewhat poor. So we made the calibration curve to express the relation between Cu(II)ion concentration and current, which has the tolerable error, 20~30% within Cu(II)ion concentration 20~200μM. Microfluidic system with s-BLM was made of PDMS(polydimethylsiloxane) using soft lithography and molding technique. Using this system, we could perform the various jobs such as to make the nascent silver surface without cutting silver wire, coat BLM on silver surface, inject KCl buffer solution and instill Cu(II)analyte. But this system has the error of 12~34% in measuring the Cu(II)ion concentration in analyte, comparing with the current price calculated from the calibration curve.