

Development of microfluidic separation technology for the analysis of bacteriorhodopsin

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A noble method was investigated for the improved purification of bacteriorhodopsin (BR) with the protein separation technology in the microfluidic device. Aqueous two phase system (ATPS) and ionic liquid two phase system (ILTPS) were carried out for the removal of contaminated hydrophobic proteins and lipids from pretreated sample of purple membrane. The micro-dialysis system was applied to remove small molecules such as sucrose and salts in the microfluidic channel. For the effective purification of BR in the microfluidic device, in which is combined with micro-dialysis and ATPS (or ILTPS), was applied to the production of purified BR. In addition, we were able to make a stable three-phase flow with controlling the flow rate in the microfluidic channel. Our complex purification methods were successfully achieved to purify and recover the BR up to its required value.

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