Noble Metal Nanostructure for Cell Lysis using Photothermal Effect

김수경[1,2], 허철준[1,2], 정웅찬[1,2], 장세규[1,2], 심재원[1,2],
양승만[1,2,*]
[1]KAIST 생명화학공학과; [2]광자유체집적소자단
(smyang@kaist.ac.kr*)

In general, many researches investigating metal nanosystem focused on the optical property. Here, we have an interest in the physical property which is related with the optical property. The enhancement of electromagnetic field is induced when the wavelength of incident light matches the Localized Surface Plasmon Resonance(LSPR) peak. Cells could be lysed efficiently without any reagents or equipment by using the heat generated by light radiation on noble metal nanostructure, known as 'Photothermal Effect '. The photothermal effect occurs strongly on metal nanostructure when the incident light is resonant with surface plamon. The noble metal nanostructure was fabricated via colloidal lithography. In this system, there are two advantages. One is that the LSPR properties can be controlled in visble-NIR region by changing some fabrication conditions. Especially, the template which has LSPR peak at NIR (700nm~) was used as platform for patterning cells. The other is that this metal nanoarry is appropriate to put each cell on each gold pattern one by one geometrically. It gives us the potential to analyze the single cell in one microfluidic chip in order.