

Silver-coated Gold Nanostar for Ultra-Sensitive SERS Nanoprobe

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Various types of SERS nanoprobe have been developed for ultra-sensitive biomolecular detections including in vitro and in vivo bioimaging. Here, we developed gold nanostar coated with silver shell (AuNS@Ag) as an ultra-sensitive SERS nanoprobe. We expected that AuNS@Ag has stronger SERS signals than AuNS without silver shell because the interface between gold nanostar and silver shell can make much more hot spots, and they can be applied to various multiplex biomolecular detections. Raman-active chemicals and several fluorescent dyes were captured on gold nanostar stabilized PVP and then they were covered with silver shell by hydroquinone reduction method to achieve the higher enhancement factor (EF). The improved SERS signals of AuNS@Ag was confirmed by confocal Raman Spectroscopy regarding the feasibility of multiplexing bioassays or bioimaging.