SERS-based biosensor using novel structure of gold nanocubes

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Melamine, as a nitrogen-rich compound, is widely used in chemical industry. Although it is prohibited to add melamine in food, several products are adulterated with melamine to increase the apparent protein content, which is usually evaluated by Kjeldahl method, . In a decade, melamine has received increasing attentions as a result of melamine-contamination event in China. Melamine-contaminated infant formula caused several health problems and even death. Due to this incident, the melamine levels in food are strictly regulated for public health in worldwide.

Currently several conventional methods are used to identify melamine such as GC-MS, LC-MS, and HPLC. However, they are expensive, time-consuming, and require technical expertise. Thus, melamine detection with inexpensive, rapid and simple techniques is essential to manage food safety.

Here, we present a method for detection of melamine based on surface-enhanced Raman spectroscopy (SERS). Au nanocubes (Au NCs) were prepared with novel structure to use as SERS substrates to detect melamine with high sensitivity.