

**TNT detection based on aptamers and gold nanoparticles- Enhanced surface plasmon resonance biosensor****Hongxia Hao**

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At present, there are varied detection methods for TNT, which can be mainly divided into the traditional technology and new type of micro trace detection technology. The common ways of bulk explosive quick detecting technology are X-ray detection technology, THZ spectroscopy, ion mobility spectrometry, portable Raman spectroscopy and so on, which generally have flaws like high costs, weak sensitivity, defeating in recognize the mixture and complex, a false positive or false negative, bulky, expensive. Herein, a novel quick testing method was developed using DNA aptamer and Surface Plasma Resonance Technology (SPR). The gold nanoparticles (AuNPs) are used to enhance the Surface Plasma Resonance Signal (SESS), so that TNT can be detected directly and rapidly by highly sensitive SPR sensor. TNT aptamer Screened By System Ligand Evolution Technology (SELEX) was added to modify on AuNPs. Based on adapter competition between TNT and TNP-gly, microtrace of TNT in the solution can be detected with LOD of  $10^{-9}$ M. The linear ship of TNT concentration is  $10^{-9}$ - $10^{-6}$ M ( $r^2=0.989$ ). Herein it is the first time that aptamer was used with SPR sensor chip modified by nanoparticles to detect TNT. This method help forensic scientist discover trace explosive with portable instrument.

**Biography**

Hongxia Hao is an Assistant Professor of China University of Political Science and Law (CUPL), a member of the "2011 Plan" of the PRC national government. She has a BSc in Chemistry and received MSc and PhD in Medicine and Toxicology analysis from the Chinese People's Public Security University. In 2012, she worked in the University of Toronto as a Visiting Scholar. She is currently incharge of Forensic Science Instrument Research Center, developing the technologies of on-the-spot quick detection on drug and explosives, also with 8 patents and 40 published papers about surface plasmon resonance sensor, immunoassay and biosensor.

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