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Surface-enhanced Raman Scattering Bioprobes for Cancer Detection and Imaging

Aiguo Wu

Chinese Academy of Sciences, China

Surface-enhanced Raman scattering (SERS) technology with features of high sensitivity, selective enhancement, in situ detection, nondestructive, label free, and fingerprint spectrum has been widely utilized in various practical applications, especially for bioanalysis. Cancer diagnosis and therapy based on SERS biodetection and bioimaging have been reported as a promising approach during recent decades, and various types of materials-based SERS bioprobes are rapidly designed continuously. SERS biodetection and bioimaging has been successfully employed in cancer screening, diagnosis, and componental analysis in both *in vitro* and *in vivo* cancer tissue samples, which simultaneously provides visual morphology and biochemical information. Precise tumor tissue excision, real-time monitoring of cellular uptake process, and noninvasive cell tracking and labeling are realized due to the effective Raman image bioprobes, satisfying the requirements of precision medicine. In this talk, we will present our new progress in SERS bioimaging for cancer detection and imaging diagnosis based on various metal oxide nanoparticles and metal nanoparticles, particularly in circulating tumor cells (CTCs) in different types of cancers.

Speaker Biography

Aiguo Wu received his PhD from the Chinese Academy of Sciences supervised by Prof. Erkang Wang and Prof. Zhuang Li in China in 2003. He stayed at the University of Marburg (Prof. Norbert Hampp group) in Germany during 2004–2005, Caltech (Prof. Ahmed Zewail group) in USA during 2005–2006, and Northwestern University (Prof. Gayle Woloschak group) in USA during 2006–2009. In 2009, he joined NIMTE, CAS as a PI. He has published over 239 peer-review papers, H-index = 58, four books, and nine book chapters and has been awarded 73 invention patents. His lab focuses on using nanoprobes for early diagnosis and therapy of diseases and so forth.

e: aiguo@nimte.ac.cn

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