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Analysis of biomolecules through nanomaterials based mass spectrometry

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Surface-assisted laser desorption/ionization mass spectrometry (SALDI-MS) using nanomaterials as matrix has become a powerful technique for the analysis of biomolecules, including proteins, DNA, peptides, amino thiols, and carbohydrates. SALDI-MS has been developed to improve sensitivity and quantitation, with minimum problems associated with sweet spots. Several successful examples of the analysis of biomolecules through SALDI-MS will be discussed in my talk. SALDI-MS with HgTe nanostructures as matrix is useful for the detection of proteins such as IgG, protein G, and their complexes. SALDI-MS allows simultaneous detection of single- and double-stranded oligodeoxynucleotides, with limits of detection at the femtomole-to-picomole level and sample-to-sample intensity variation < 23%. SALDI-MS using gold nanoparticles (Au NPs) is sensitive for the detection of the digest of Cyt c in the HeLa cells treated with etoposide (a commercial drug) or carbon dots (potential drug).

Biography

Huan-Tsung Chang is currently a professor of National Taiwan University. He is a Fellow of the Royal Society of Chemistry. He obtained his Ph. D from the Department of Chemistry, Iowa State University in 1994. He has been published more than 250 papers. His research interests include (1) Green synthesis of nanomaterials (NMs); (2) NMs based mass spectrometry; (3) Functional NMs for sensing and cell imaging; (4) Functional NMs as potential drugs and antibacterial agents; (5) NMs based fuel cells; (6) Quantum dots solar cells; and (7) Separation

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