摘要

我們利用能與硫化鋅晶體產生結合能力的生肽分子，來置換硒化鎘/硫化鋅奈米粒子表面的有機分子，而合成出具有高光學穩定性、水溶性的奈米粒子。不同尺寸的奈米粒子經由此官能基轉換之後仍保有其原本的吸收、螢光光學性質，且奈米粒子的粒徑大小並無明顯的增減，而粒子與粒子間的分散性亦相當良好，顯示出這樣的水溶性奈米粒子，非常適合於生物系統上的應用。最後我們將晶體表面上的生肽分子，利用生物連接試劑與抗體作進一步的結合，並將此標定有半導體奈米粒子的抗體進行螢光免疫檢測，實驗結果證實了該半導體奈米粒子對抗體活性並無明顯的影響，因此這樣的奈米粒子-抗體連結方式，可被期望作為一種生物檢測、標定的有效工具之一。

Abstract

We utilized the peptide molecules capping ZnS crystal surface to exchange the organic ligand onto CdSe/ZnS core-shell nanoparticle, that resulted in highly fluorescent, water-soluble one. Various sizes of particles via surface functional group exchange could retain their original morphology and optical property such as uv-vis absorption, and fluorescent. To covalently attach the peptide-capped nanoparticles to biological macromolecules, we used cross-linker reagent coupling the nanoparticles and antibodys. The particles-labeled antibodys were employed in fluoroimmunoassays, and the result demonstrated that the particle-antibody conjugation would not affect the activity of protein. These peptide-capped nanoparticles promise to be a versatile tool for probing of biological systems and biolabeling.