

## Full Papers

研究金纳米粒子和牛血清白蛋白以及羊抗兔免疫球蛋白G的相互作用

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**摘要** 通过检测蛋白质与金纳米粒子结合前后的zeta电位和荧光淬灭的变化, 研究金纳米粒子和蛋白质, 如牛血清白蛋白以及免疫球蛋白G之间在不同pH条件下的相互作用。当加入蛋白质后, 金胶体溶液在透射电镜和紫外-可见分光光度计检测时有聚集的现象。实验结果表明, 当pH值增大时, zeta电位变化很明显, 而结合常数 $K_b$ 和化学计量数 $n$ 增加的趋势比较平缓。总之, 有两个因子能明显地影响金纳米粒子和蛋白质之间的相互作用, 那就是表面电荷以及金纳米粒子和蛋白质上面的色氨酸的吲哚环之间的共价作用。

**关键词** [金纳米粒子](#), [牛血清白蛋白](#), [免疫球蛋白G](#), [zeta 电位](#), [荧光淬灭](#)

分类号

## Interaction between Gold Nanoparticles and Bovine Serum Albumin or Sheep Antirabbit Immunoglobulin G

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**Abstract** The interaction between gold nanoparticles and proteins such as bovine serum albumin and immunoglobulin G under the condition of different pH values was studied based on the measurement of zeta potential and fluorescence quenching of the proteins before and after proteins were bound with gold nanoparticles. Aggregations were found in gold colloid aqueous solution after addition of proteins by TEM characterization and UV-Vis spectroscopy determination. The results showed that the values of zeta potential were quite different, the binding constant  $K_b$  and stoichiometry  $n$  were slightly increased with the increase of pH value. In conclusion, two factors could affect markedly the interaction between gold nanoparticles and proteins, that is, surface charge and the coordination effect between gold nanoparticles and indole group of the tryptophan residue of proteins.

**Key words** [gold nanoparticle](#) [bovine serum albumin](#) [immunoglobulin G](#) [zeta potential](#) [fluorescence quenching](#)

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