SPECTROSCOPIC INVESTIGATION OF GOLD NANOCLUSTERS UNDER DIFFERENT PH CONDITIONS

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Gold nanoclusters (AuNCs) have attracted significant interest due to their unique size-dependent optical properties, which make them promising materials for applications in sensing, bioimaging, and nanophotonics. The photophysical behavior and stability of AuNCs are known to be strongly influenced by their chemical environment, particularly by pH, which can affect surface chemistry, aggregation processes, and electronic structure. Understanding these effects is essential for the reliable use of gold nanoclusters in aqueous systems.

In this work, the influence of pH on the optical properties of AuNCs was investigated using spectroscopic methods. A series of solutions with pH values ranging from 1 to 13 was prepared, and AuNCs were introduced under identical conditions. Fluorescence and absorbance spectroscopy were employed to monitor the optical response of the nanoclusters immediately after mixing and as a function of time. The study aims to assess the pH-dependent stability and optical behavior of AuNCs and to identify conditions suitable for further spectroscopic and application-oriented studies.

Keywords: Fluorescence, Absorption, Gold nanoclusters, pH dependence.