

**TITLE**

**Colorimetric detection of muriatic acid using label-free gold nanoparticles: From environmental applications to detection of gastric acid**

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Muriatic acid, commonly known as hydrochloric acid, has wide spread industrial and domestic applications. It is also found naturally in gastric acid. Recently it has become one of the most critical acids responsible for wetland acidification and other environmental pollutions. However, a rapid and selective detection technique for this acid is not yet developed. Conventional silver nitrate test used for the detection of this acid is not able to discriminate the source of chloride ion. Thus it becomes too difficult to detect the amount of this critical acid quantitatively. In the present approach, a colorimetric, label-free, and non-aggregation-based gold nanoparticles (Au NPs) probe has been suggested for the detection of hydrochloric acid in aqueous medium, based on the fact that hydrochloric acid causes the leaching of Au NPs in presence of strong oxidizing agents like nitric acid or hydrogen peroxide. This process leads to the remarkable damping of the surface Plasmon resonance (SPR) absorbance of the Au NPs dispersions. This process is highly dependent on the size of the Au NP in the aqueous dispersion and provides fair degree of selective over a wide range of mineral acids, salts, and anions and is useful for the rapid detection of HCl, at a concentration as low as 1000 ppm far below the maximum limit available in gastric juice. We hope that the present approach will be useful to a wide range of researchers working with metal nanoparticles based sensors for biological sensing.

**Biography**

S. K. Tripathy has completed his PhD in Materials Engineering from Chonbuk National University, Jeonju and lectured there for 1 year. Then he moved as a Research Professor to Korea University. He has published 27 research articles and filled 1 patent.