



## Spectrofluorometric assay using gold nanoparticles and cationic dye Rhodamine B for selective and sensitive detection of L-Cysteine in aqueous environment

Pabitra kumar paul

Jadavpur University, India

### Abstract:

L-Cysteine (truncated as L-Cys) is a significant thiol containing amino corrosive which is found in human plasma and is known as the essential structure square of protein. This amino corrosive is engaged with numerous basic and significant natural cycles in our physiological framework. Despite the fact that the presence of L-Cys in our body has number of medical advantages, yet overabundance measures of this amino corrosive in human plasma or pee causes a few medical issues, for example, neurotoxicity<sup>1</sup>, urinary stones<sup>2</sup> and so forth In this way, it is of prime significance to distinguish L-Cys specifically and all the more precisely to keep our body from different sicknesses. In this current investigation we address a system for particular and delicate detecting stage using the connection of colloidal gold nanoparticles and cationic color Rhodamine B (RhB) towards the identification of L-Cys from the fluorometric change of the color particles in a watery climate. At first the presence of Au NPs causes the exceptional decrease of fluorescence sign of RhB atoms in their blended arrangement because of some non-radiative energy move measure. Be that as it may, the expansion of L-Cys answer for Au/RhB blended arrangement recuperates the fluorescence signal and is discovered to be direct inside the fixation scope of 0.01  $\mu\text{L}$  - 1000  $\mu\text{L}$  of L-Cys. The test furthest reaches of location (LOD) was 0.01  $\mu\text{L}$  and might be equivalent to that present in human blood plasma. Likewise the recuperation of fluorescence of RhB because of the specific connection of L-Cys with Au NPs is went with a shading change from wine to somewhat blue dark. The impedance of all other amino acids including some thiol (-SH) containing amino acids alongside certain synapses ( $\text{Na}^+$ ,  $\text{K}^+$  and so on) present in our body have been tried in a similar watery climate. The proposed component for detecting of L-Cys is additionally tried with human pee test to affirm its appropriateness to the genuine natural example in vitro. UV-vis ingestion and Transmission electron microscopy have been utilized to describe the



as incorporated Au NPs. Our proposed fluorometric examine technique for L-Cys recognition may have extraordinary potential for biomedical applications with serious level of exactness.

### Biography:

Pabitra Kumar Paul has completed his PhD in Physics from Tripura University, India in 2011 and presently working as an Associate Professor at Jadavpur University in India. He did Post-doctoral Studies from Department of Chemistry of the University of Texas at El Paso, USA and Osaka University, Japan. He has published more than 25 papers in reputed international journals and also reviewers of many reputed research journals. He has active collaboration with many research groups in India and abroad.

### Publication of speakers:

- Janáky, R., Varga, V., Hermann, A., Saransaari, P., Oja, S.S. Mechanisms of L-cysteine neurotoxicity. *Neurochem. Res.* 25 (9-10) (2000) 1397-1405.
- Rimer, J.D., An, Z., Zhu, Z. Lee, M.H., Goldfarb, D.S., Wesson, J.A., Ward, M.D., Crystal growth inhibitors for the prevention of l-cystine kidney stones through molecular design. *Science* 330 (6002) (2010) 337-341.

[Materials Engineering and Nanotechnology Conference, November 25-26,2020, Singapore City, Singapore](#)

**Citation:** Pabitra kumar paul, Spectrofluorometric assay using gold nanoparticles and cationic dye Rhodamine B for selective and sensitive detection of L-Cysteine in aqueous environment ,November 25- 26,2020, Singapore City, Singapore