Functionalized silver nano-sensor for colorimetric detection of Hg2+ ions: Facile synthesis and their docking studies

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In the present study, we describe the facile synthesis of silver nanoparticles (AgNPs) and their functionalized nanostructures with 2-aminopyrimidine-4,6-diol (APD-AgNPs) for Hg^{2+} ion detection. The promising colourimetric response of APD-AgNPs to detect Hg^{2+} ions were noticed with naked eyes and spectroscopic changes were examined by using UV-Visible spectrophotometer. The aggregation of APD-AgNPs up on addition of Hg^{2+} ions was due to chelation effect of functionalized nanostructures and exhibit colour change from pale brown to deep yellow colour. The probing sensitivity was observed within five minutes with a detection limit of about 0.35 µM/L. The TEM images of APD-AgNPs showed poly-dispersed morphologies having hexagonal, heptagonal and spherical nanostructures with average size between 10 to 40 nm. Furthermore, the sensing behaviour of APD-AgNPs towards Hg^{2+} ions detection was investigated using docking and interaction studies.

Speaker Biography

Shiva Prasad Kollur received his Ph.D. degree from the University of Mysore, Mysuru in 2012. He persued his post-doctoral studies at Indian Institute of Science, Bengaluru. He joined as an Assistant Professor in Chemistry at Manipal Academy of Higher Education, Manipal in 2015. His research interests include Coordination Chemistry, Bioinorganic Chemistry, Materials Chemistry, Sustainable Chemistry and development of novel green synthetic approach for the production of nanomaterials.

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