

## **GUM KARAYA STABILIZED AG NANOPARTICLES SOLUTION AND ELECTROSPUN MEMBRANE FOR DETECTION AND THE REMOVAL OF Hg<sup>2+</sup> FROM WATER**

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### **Abstract**

Ag Nanoparticles (Ag NP) were synthesised by Gum Karaya (*Sterculia Urens*), a tree gum, which performed as both reducing and capping agent. The morphology, characterization and reducing ability of Gum Karaya stabilized Silver nanoparticles (GK/Ag NPs) were assessed using scanning electron microscopy, UV-Vis spectroscopy, ATR-FTIR techniques and ICPMS analytical methods. Stability of synthesized Ag NPs in various pH conditions (2 to 10) and selectivity for Hg<sup>2+</sup> detection over other anions (Cl<sup>-</sup>, SO<sub>4</sub><sup>2-</sup> and CO<sub>3</sub><sup>2-</sup>) were also evaluated. GK/Ag NPs were directly used for the colourimetric detection of Hg<sup>2+</sup> ions in the range from 1 to 23 ppm at the absorbance of 380 nm. The detection limit for Hg<sup>2+</sup> ions in water solution was determined to be 1ppm. The removal of Hg<sup>2+</sup> ions from water were also estimated using electrospun GK /Ag -Membrane.

**Keywords:** Gum Karaya, Silver Nanoparticles, Hg<sup>2+</sup>Detection, Silver membrane

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