

Accepted Manuscript

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PII: S0925-4005(18)30621-X
DOI: <https://doi.org/10.1016/j.snb.2018.03.123>
Reference: SNB 24408

To appear in: *Sensors and Actuators B*

Received date: 11-5-2017
Revised date: 18-3-2018
Accepted date: 19-3-2018

Please cite this article as: Sumit Sarkar, Ratan Das, Presence of chlorpyrifos shows blue shift of the absorption peak of silver nanohexagons solution – An indication of etching of nanocrystals and sensing of chlorpyrifos, *Sensors and Actuators B: Chemical* <https://doi.org/10.1016/j.snb.2018.03.123>

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Presence of chlorpyrifos shows blue shift of the absorption peak of silver nanohexagons solution -An indication of etching of nanocrystals and sensing of chlorpyrifos

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Highlights:

- Silver nano-hexagons (~50 nm) have been prepared using PVP as a capping agent.
- AgNHs have been used for the sensing of chlorpyrifos (CP).
- Absorption spectra show a blue shift of SPR peak of AgNHs in presence of CP.
- Blue shift confirms the etching of AgNHs by chlorpyrifos.
- AgNHs also degrade chlorpyrifos.
- The degradation product, TCP appears in the absorption spectra.

Abstract: Here in this work, we have used synthesized silver nano-hexagon for the sensing of chlorpyrifos (CP) in water at very low ppm level. Silver nano-hexagons have been synthesized through chemical reduction method, using polyvinylpyrrolidone (PVP) as a capping agent, with an average size of around 50 nm. Colorimetric as well as spectrophotometric analysis show the sensing of chlorpyrifos at very low ppm level of 5 ppm, which is based on the surface plasmon resonance (SPR) of silver nanocrystals. It has been

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