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# Selective and sensitive colorimetric detection of the neurotransmitter serotonin based on the aggregation of bifunctionalised gold nanoparticles

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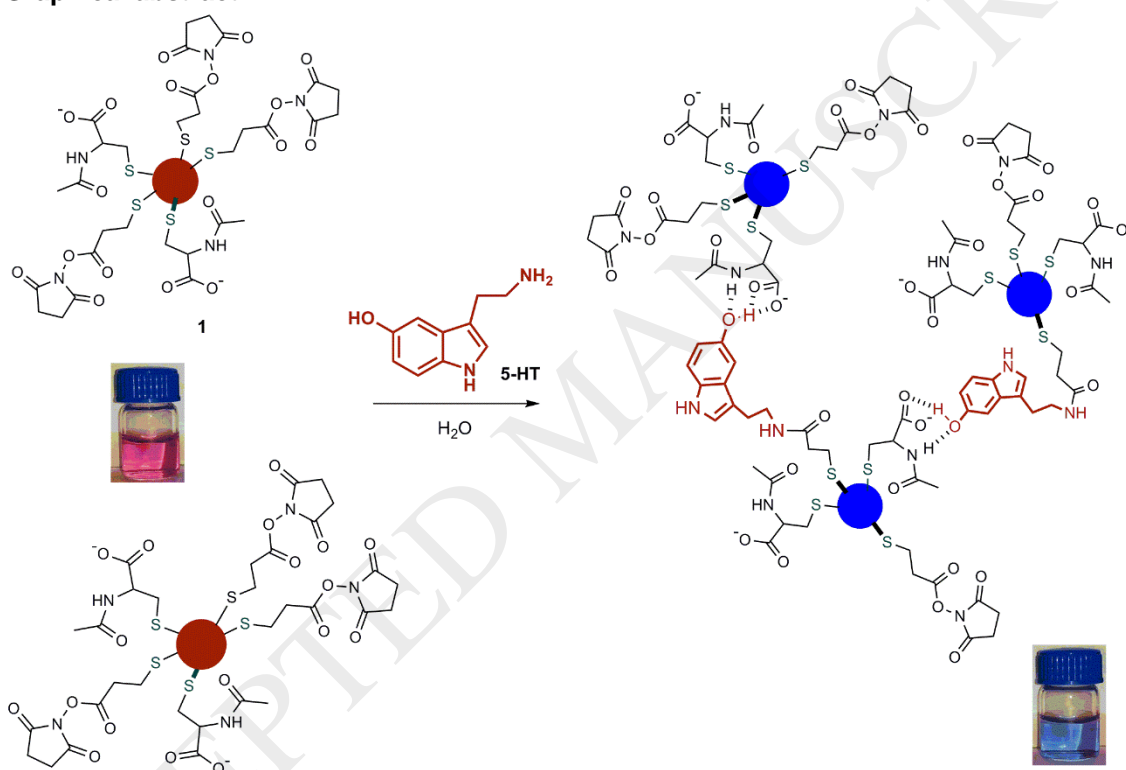
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## Graphical abstract



**Abstract:** We report a simple, sensitive and selective method for the colorimetric detection of serotonin (5-HT) in aqueous media using bifunctionalized gold nanoparticles (AuNPs). The probe (**1**) consisted of AuNPs functionalised with dithiobis(succinimidylpropionate) (DSP) and N-acetyl-L-cysteine (NALC). DSP was chosen to react with the amino group of 5-HT, whereas NALC was chosen to bind the hydroxyl group in 5-HT through hydrogen bonding and electrostatic interactions. A double interaction between nanoparticles and the hydroxyl and the amino group of serotonin led to interparticle-crosslinking aggregation. This, resulted in a colour change from red to blue that can be observed by the naked eye. The probe was selective to 5-HT and no colour modulation was observed in the presence of other neurotransmitters (i.e.

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