#### Formation of Gold nanoparticles upon chitosan leading to formation and collapse of gels

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#### **ELECTRONIC SUPPLEMENTARY INFORMATION**



Figure S1: Absorbance maxima (value and position) for 1 wt% chitosan solution containing

different quantities of HAuCl<sub>4</sub>.



### Figure S2:

Chitosan - gold gel made using 5mM HAuCl<sub>4</sub> placed on a hot plate. The color of the gel exposed to the hot plate became red in color indicating the formation of Au nanoparticles. The gel collapsed faster with application of heat.





### Figure S3:

EDAX spectra for (A) chitosan gels formed using 5 mM HAuCl<sub>4</sub> (B) chitosan gels formed using 5 mM HAuCl<sub>4</sub> and 100 mM NaOH.



# Figure S4:

SEM image for Chitosan-gold nanocomposite made using 1 mm HAuCl<sub>4</sub>. The size distribution for Au nanoparticles (~ 7.35±1.6 nm).



#### Figure S5:

FTIR spectra for the gel made using 5 mM HAuCl<sub>4</sub> taken at two different times (1) 6 hrs (the gel had formed) and (2) 120 hrs (the gel had completely collapsed). The amide (II) and amide (III) peak has been affected due to the formation of Au nanoparticles.



**Figure S6:** Effect of adding 5 mM of HAuCl<sub>4</sub> to (1) 0.25 wt% and (2) 1 wt% chitosan solution as a function of time. 0.25 wt% chitosan solution does not form gel while 1 wt% chitosan solution forms gel.



## Figure S7:

UV-Vis measurements for chitosan-gold gel containing (A) Insulin and (B) Methyl Orange