

## Dielectric investigation of conducting fibrous nonwoven porous mat fabricated by one-step facile electrospinning process.

### Supplementary Information

#### Experimental Section:

*P. emblica* extract was prepared by using wet method and added drop wise in a solution of 100ml 1mM Gold Chloride ( $\text{HAuCl}_4$ ) and stirred till the colour of solution changed from pale yellow to red wine which confirmed gold nanoparticles in solution [27]. Further the presence of AuNP particle in the prepared red wine coloured solution was confirmed by the absorption peak of the solution at 540 nm obtained from UV-vis spectroscopy as shown in figure1.

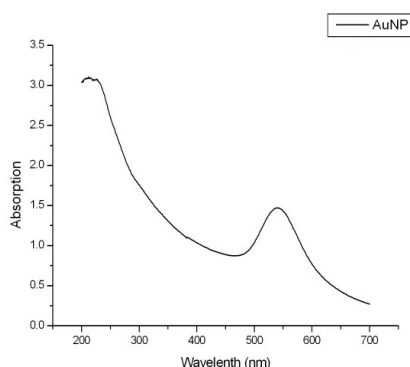
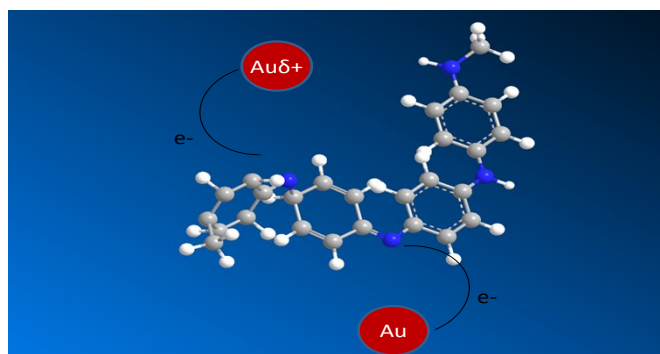


Fig.1 Absorption Spectra of Au nanoparticle.

#### Results and Discussion:

##### Ac Conductivity:

Electric field causes hopping of localized charge carriers to their neighbouring sites (figure 2) which results in the dielectric relaxation. This hopping of charges causes electrical conduction by forming conducting network which supports the movement of charges, physically over the entire sample [3].



**Fig. 2** Schematic Representation of charge transfer Between PANI & Au nanoparticle in PVA/ PANI/AuNPs electrospun fiber.

**Reference:**

3. Asma B. Afzal, M. Javed Akhtar, Muhammad Nadeem, and M. M. Hassan, J. Phys. Chem. C, 2009, **113**, 40.
27. Ramdayal and K. Balasubramanian, Colloids and Surfaces A: Physicochem. Eng. Aspects, 2014, **455**, 174–178.