

Regenerative Silver Nanoparticles for SERRS Investigation of Metmyoglobin with Conserved Heme Pocket

**Govindasamy Kalaivani,^a N. S. Venkata Narayanan,^b Arumugam Sivanesan,^{*c} Ayyadurai
Kannan,^a Agnieszka Kaminska^c and Ranganathan Sevel^{*a}**

^a Department of Chemistry, Vivekananda College, Tiruvedagam West, Madurai - 625 234,
Tamilnadu, India. E-mail: rsevel@yahoo.com; Tel: +91 9865708536;
Fax: +91 4543 258358.

^b Department of Chemistry, Imperial College London, South Kensington
Campus, London SW7 2AZ, United Kingdom.

^c Institute of Physical Chemistry, Polish Academy of Sciences, Kasprzaka
44/52, 01-224 Warsaw, Poland. E-mail: asnesan@gmail.com.

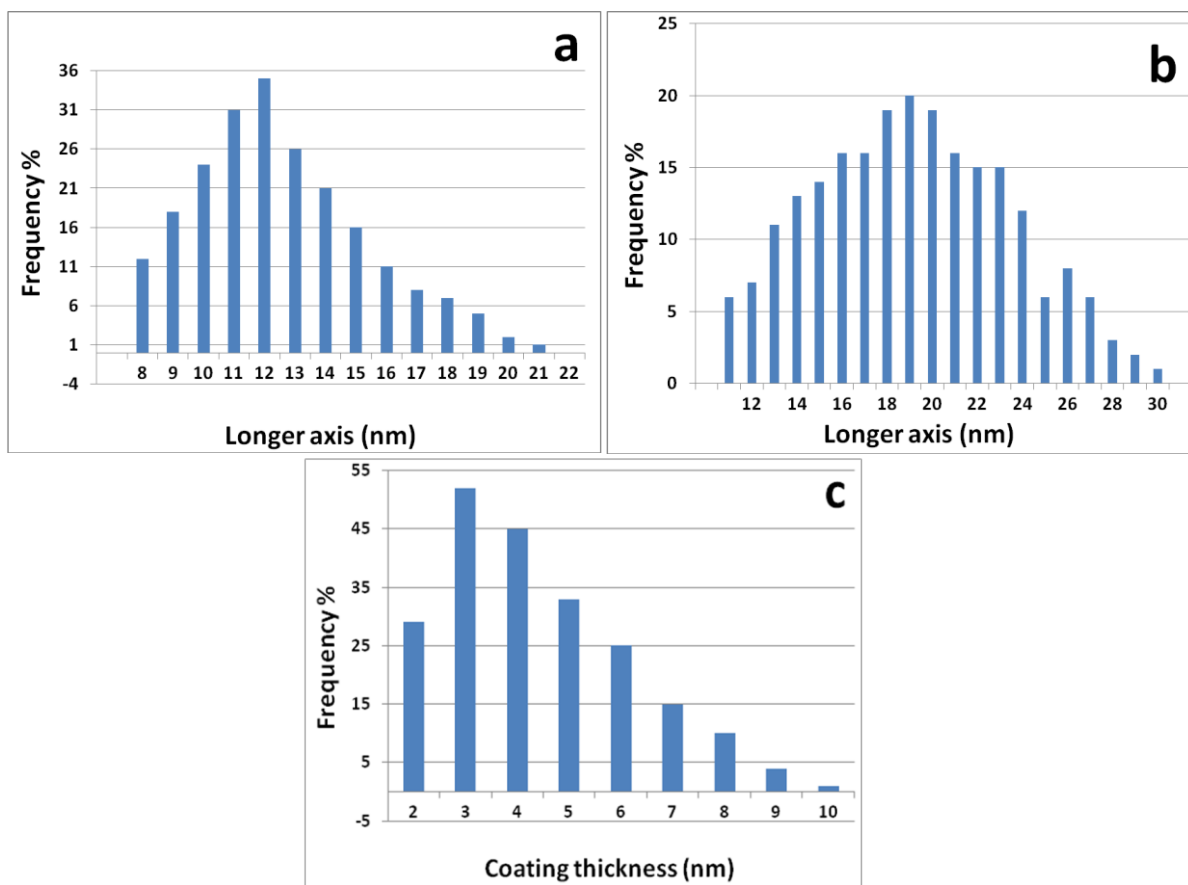


Fig. S1 Size distribution of (a) sodium borohydride reduced seed Ag@citrate NPs (205) and (b) Ag@SiO₂ NPs calculated from longer axis of the particles (225). (c) Distribution of silica coating thickness of Ag@SiO₂ NPs (214). The numbers given in bracket are the number of nanoparticles counted for the measurement.

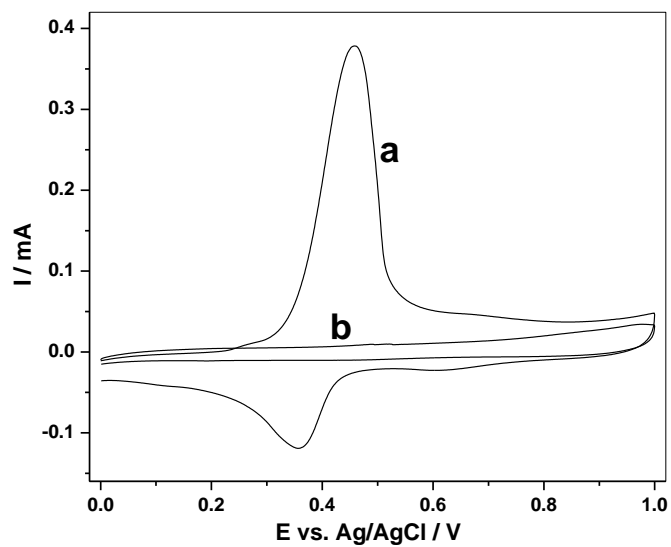


Fig. S2 Cyclic voltammogram of (a) enlarged Ag@citrate NPs and (b) Ag@SiO₂ NPs coated glassy carbon electrode in 0.1 M H₂SO₄ at a scan rate of 0.1 Vs⁻¹.

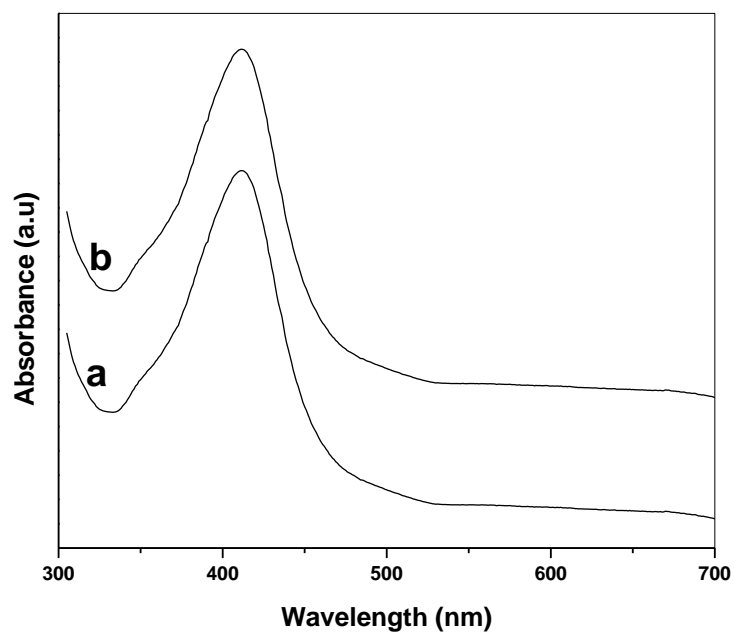


Fig. S3 UV-visible spectra of (a) freshly prepared Ag@SiO₂ NPs and (b) regenerated Ag@SiO₂ NPs after SERRS study with metMb.

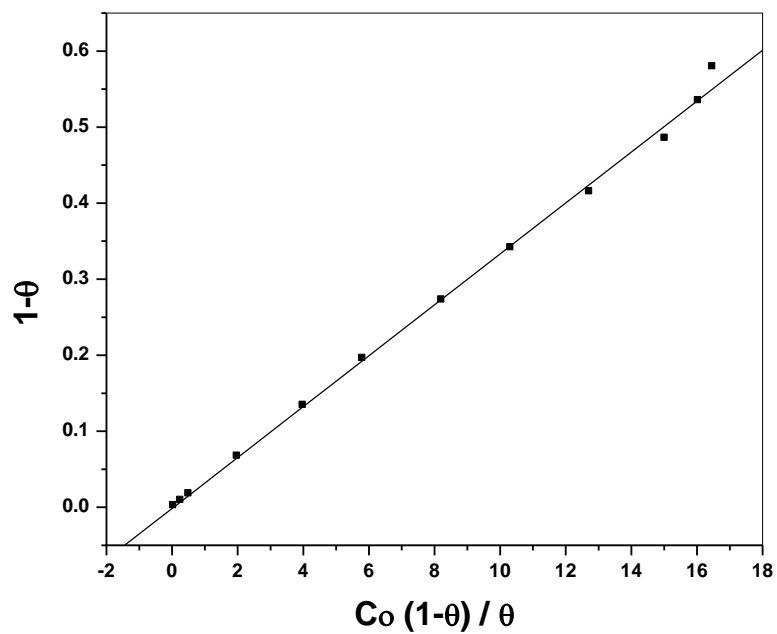


Fig. S4 Langmuir adsorption isotherm plot for the determination of real surface coverage (Γ_s^*) and equilibrium constant (K).

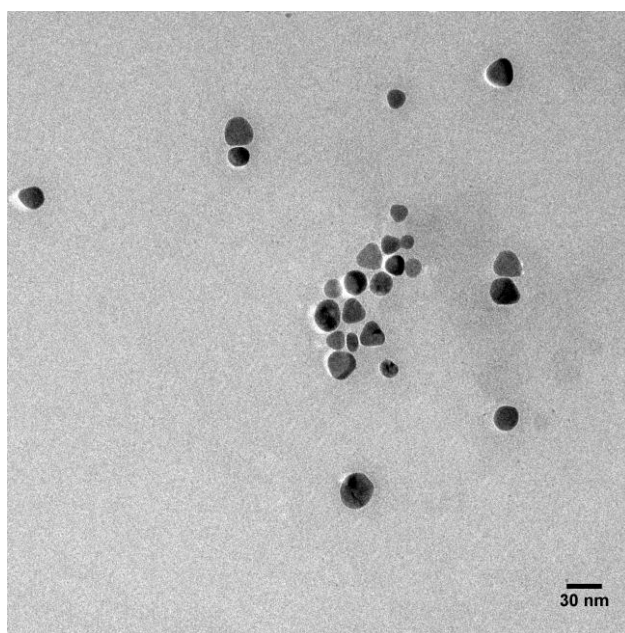


Fig. S5 TEM pictures of enlarged Ag@citrate NPs.

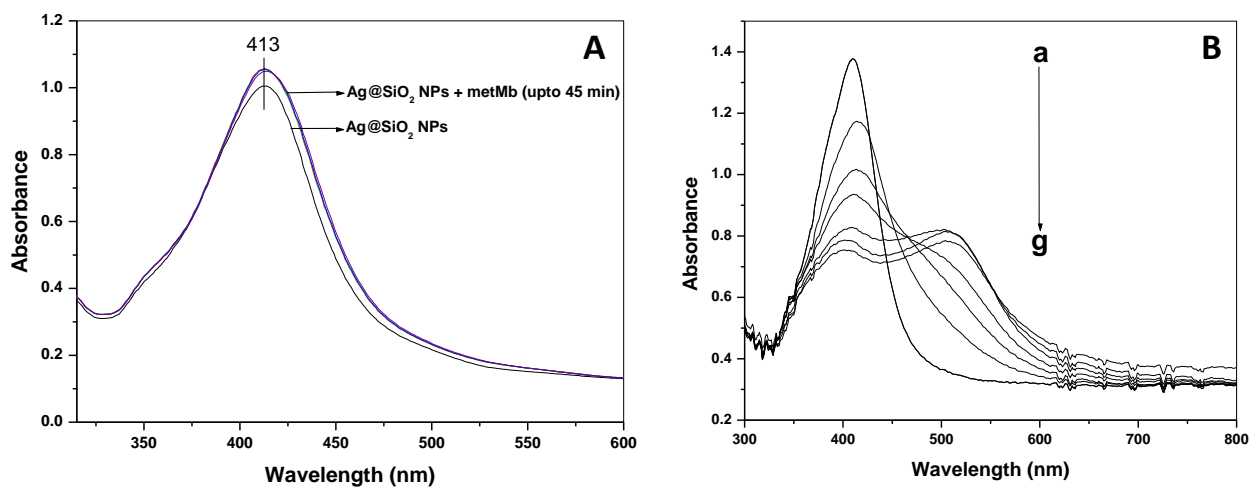


Fig. S6 UV-visible spectra of (A) Ag@SiO₂ NPs before and after the addition of metMb (B) enlarged Ag@citrate NPs (a) before and (b-g) after the addition of metMb with respect to time (0 - 45 min).

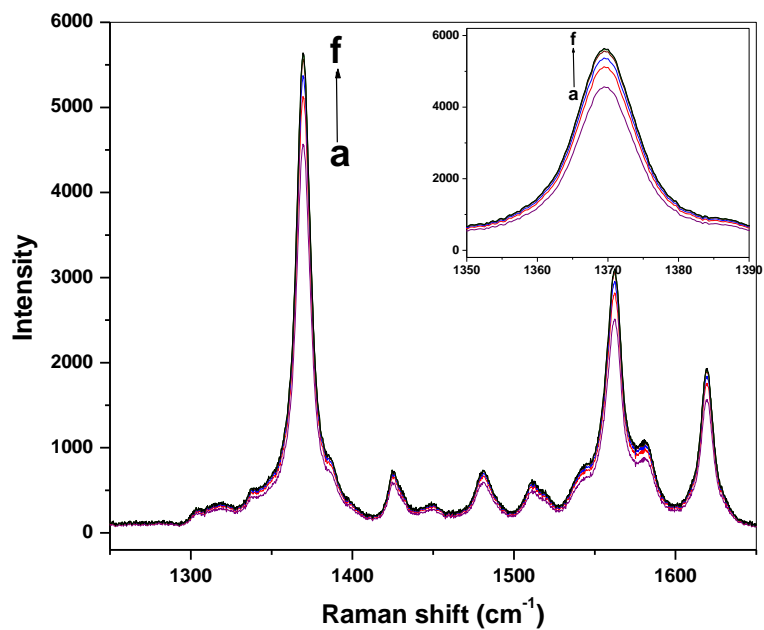


Fig. S7 SERRS spectra for the mixture of 200 nM metMb and Ag@SiO₂ NPs with respect to time (a) immediate spectrum after the addition of Ag@SiO₂ NPs, (b) after 2 min and (c-f) after 4 to 10 min.