Electronic Supplementary Information

Arсенатная стабилизированная Cu\textsubscript{2}O Наночастица катализатора для однородных реакций при передаче одного электрона

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Characterization of As(0): From the FESEM, TEM and UV-vis spectra (Figure S1a,b,c) we did not get clear idea about the oxidation state of arsenic in the yellowish brown solution. Not much information regarding As(0) has been reported in literature. According to the literature report As(0) shows its characteristic XPS peak at 40.7 eV and that of our synthesized amorphous yellowish brown solution shows a peak at 40.3 eV(Figure S1d). As the material is amorphous in nature we did not get any conclusive information from the XRD data of the drop casted spots. But upon annealing the sample on a glass slide at 400°C for 2 h the peaks corresponding to As(0), As₂O₅ and SiO₂ have been observed [Figure S1e, inst contains the image of the annealed As(0)]. This is because of the acquired crystalline character of As(0) due to annealing and in turn some As(0) is oxidized to As₂O₅.

Thus from the above discussion it is clear that as-synthesized yellowish brown solution contains As(0) nanoparticles in dispersion.
**Figure S1:** (a) UV-vis spectrum (b) FESEM (c) TEM [inset SAED] (d) XPS and (e) XRD [inset digital image of the annealed As(0)] of as-synthesized As(0) NPs
**Figure S2:** Accounts of reduction of Eosin Y by NaBH₄ with different doses of catalyst using UV-visible spectra
Figure S3: UV-visible spectra of (a) reduction of Eosin Y by NaBH₄ by already reported Cu₂O nanoparticle, (b) oxidation of Eosin Y by dissolved oxygen.

References:

