

Supplementary Material

**A simple and cost effective paper-based and colorimetric dual-mode
detection of arsenic (III) and lead (II) based on glucose functionalized
gold nanoparticles**

**Bhuneshwari Sahu, Ramsingh Kurrey, Manas Kanti Deb*, Kamlesh Shrivastava, Indrapal
Karbhal, Beeta Rani Khalkho**

School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur, CG-492010, India

***Corresponding Author**

Email: debmanas@yahoo.com (M. K. Deb)

Contact: +91 94255 03750

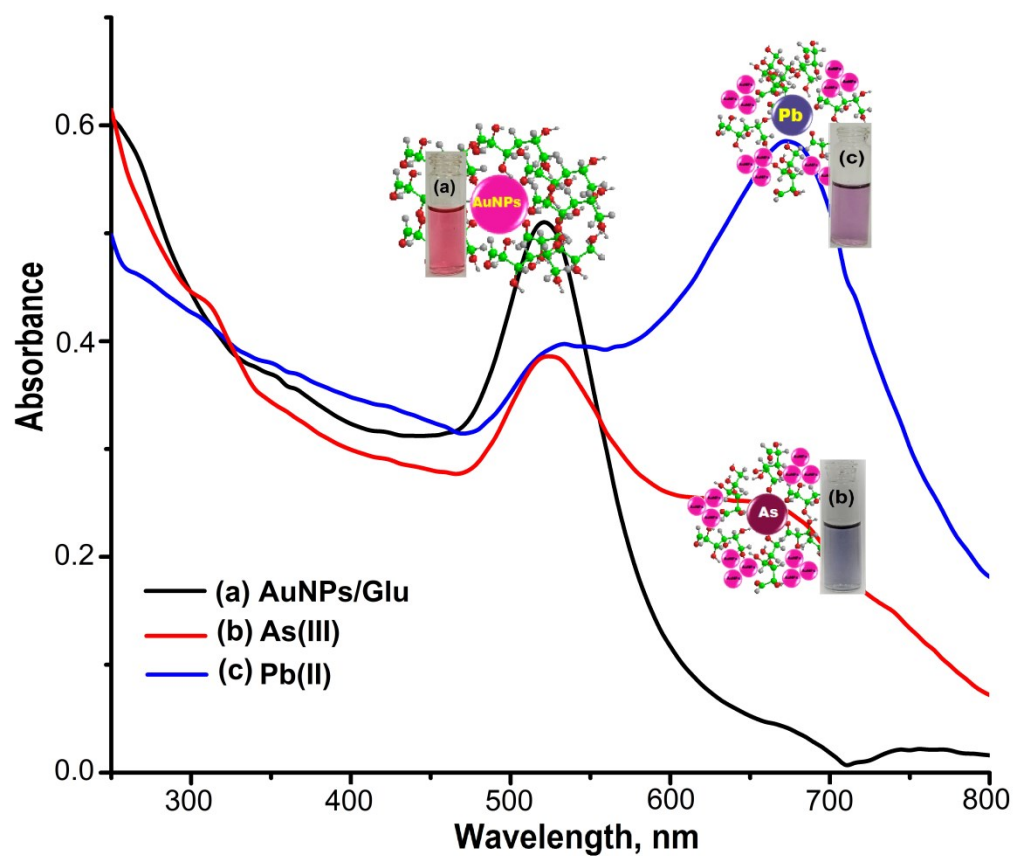


Fig.S1 Glass vial containing (a) disperse AuNPs/Glu and aggregated AuNPs/Glu with As(III) and Pb(II) and their UV-Vis absorption spectra (b-c).

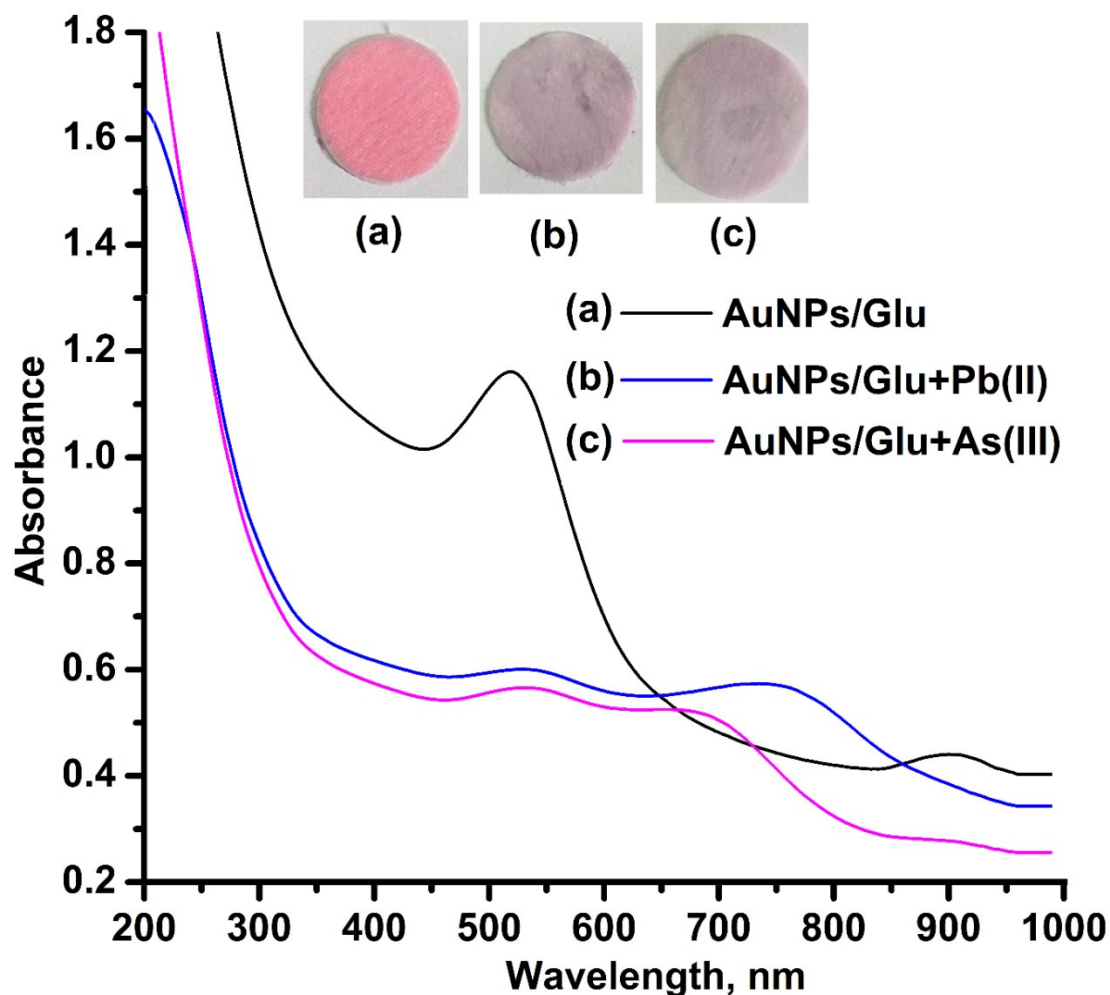


Fig. S2. Images of circular paper strips fabricated with AuNPs/Glu (a), Circular paper strip fabricated with AuNPs/Glu along with deposition of Pb(II) (b) and Circular paper strip fabricated with AuNPs/Glu along with deposition of As(III) (c) and their respective UV-Vis spectra (a-c).

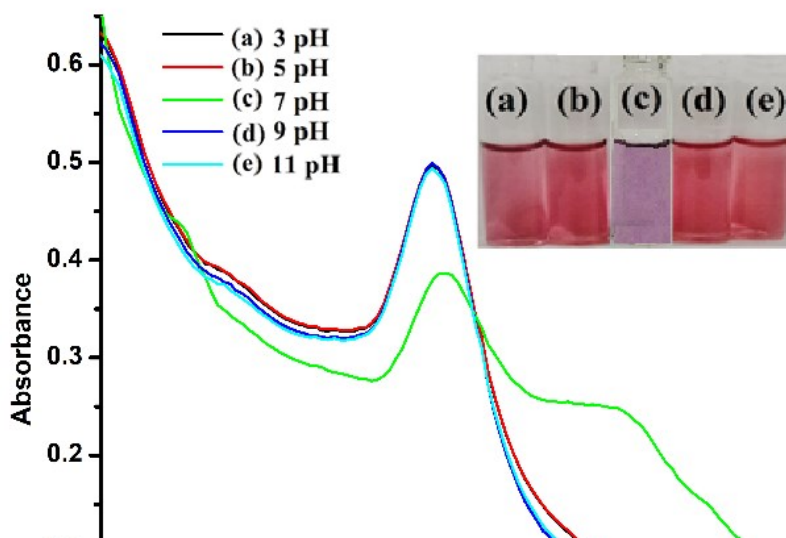


Fig. S3. Effect of pH on detection of the As(III) using AuNPs/Glu as a chemical probe.

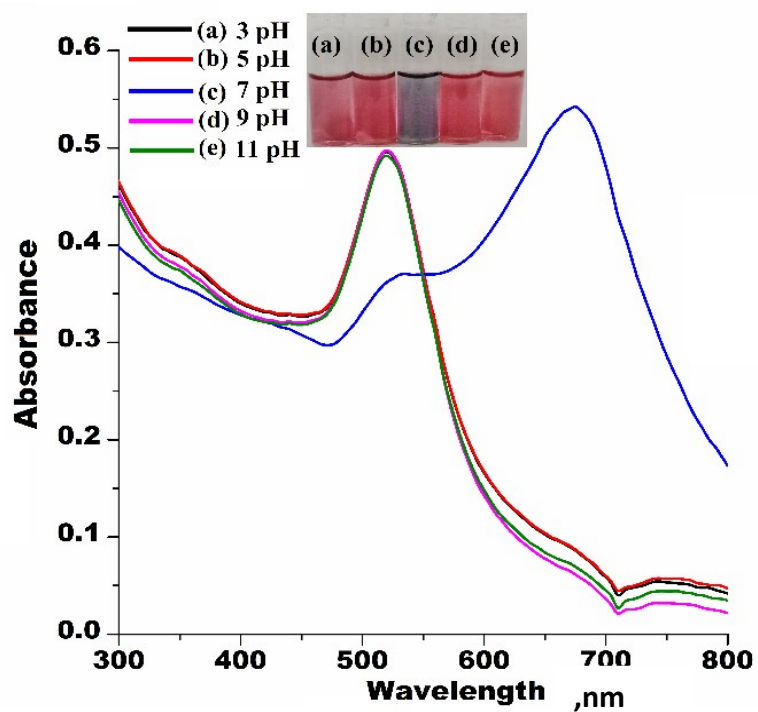


Fig. S4. Effect of pH on detection of the Pb(II) using AuNPs/Glu in colorimetric sensor

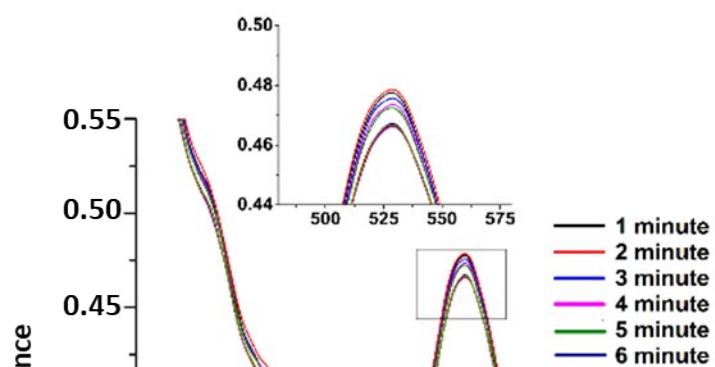


Fig. S5. Effect of reaction time for detection of As(III) using AuNPs/Glu in colorimetric sensor

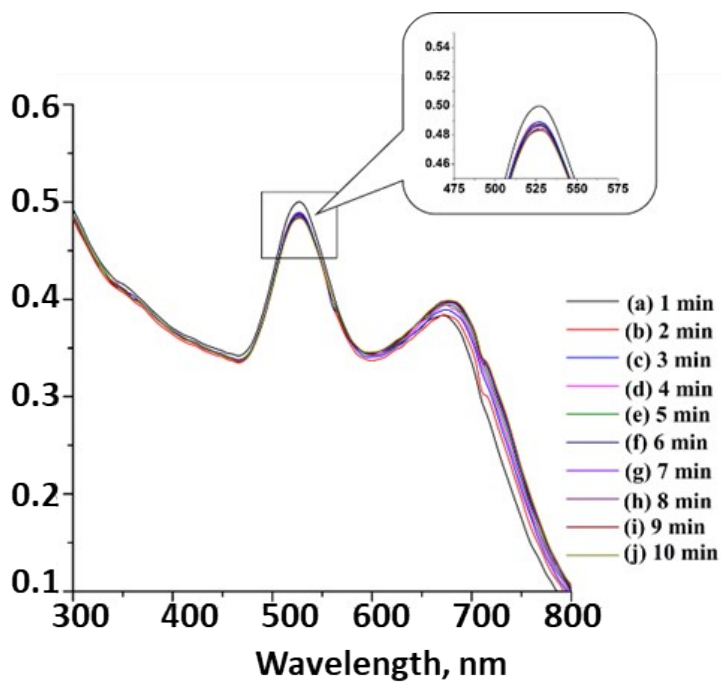


Fig. S6. Effect of reaction time on detection of Pb(II) using AuNPs/Glu in colorimetric sensor

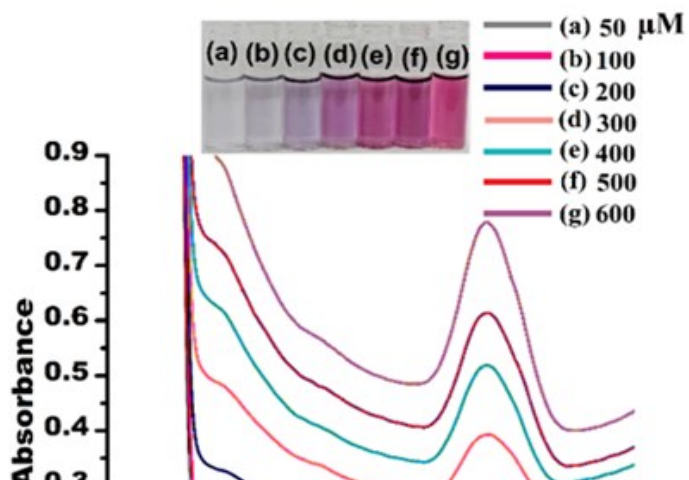


Fig. S7. UV-Vis spectral characteristics at different concentrations of AuNPs/Glu (50, 100, 200, 300, 400, 500 and 600 μM) with As(III)

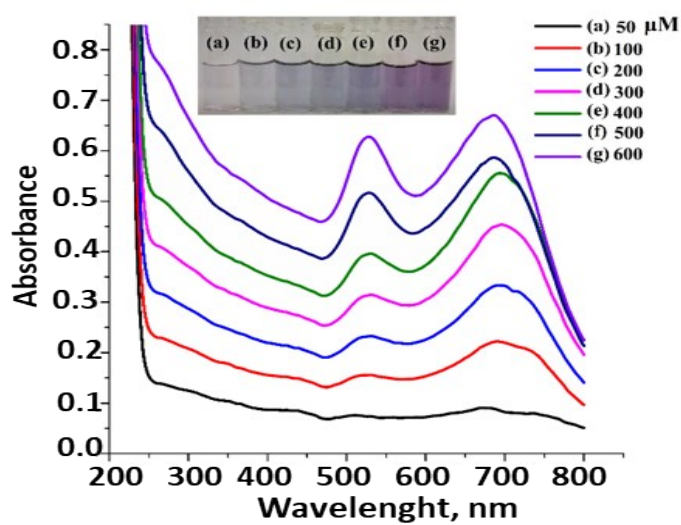


Fig. S8. UV-Vis spectral characteristics at different concentrations of AuNPs/Glu (50, 100, 200, 300, 400, 500 and 600 μM) with Pb(II)

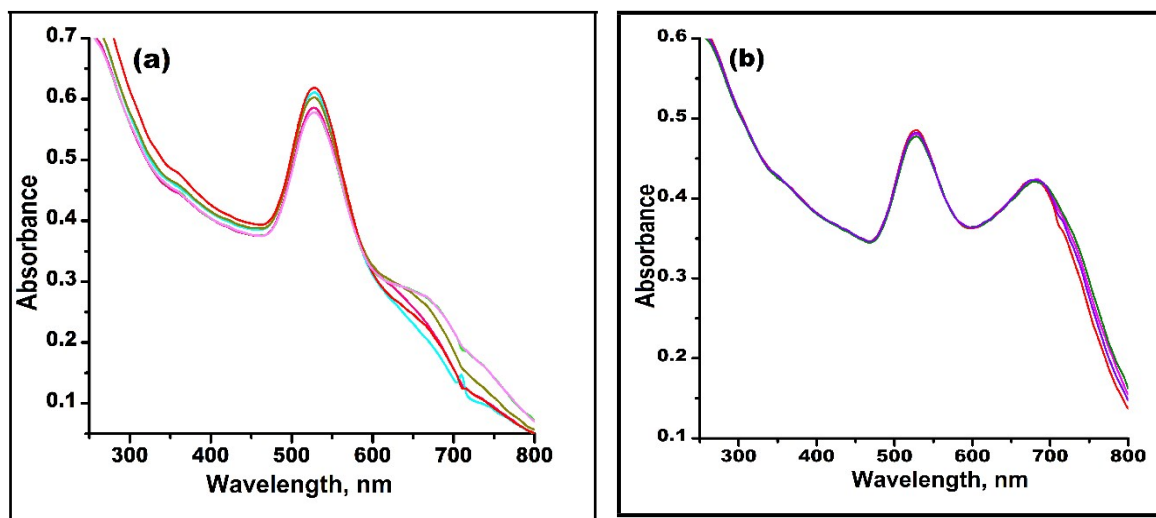


Fig. S9. Reproducibility curve for determination of As(III) and Pb(II) using AuNPs/Glu at 200 ng mL⁻¹ under the optimized condition.

Table S1. Effect of metal ions and anions for determination of As(III) and Pb(II) using AuNPs/Glu in environmental water samples

Diverse ions	Tolerance limit, mgL ⁻¹
Cu(II), Cd(II), Pb(II), Fe(III), As(III), PO ₄ ³⁻	450
Mg(II), Ca(II), Ba(II), Hg(II), NO ₃ ⁻	650
Mn(II), Co(II), Ni(II), Al(III), SO ₄ ²⁻	750
Na(I), K(I), Zn(II), Cr(IV), Cl ⁻ , CO ₃ ⁻	800