Supporting Information

Inkpen-printed reusable colorimetric sensors for detection of Hg(II)

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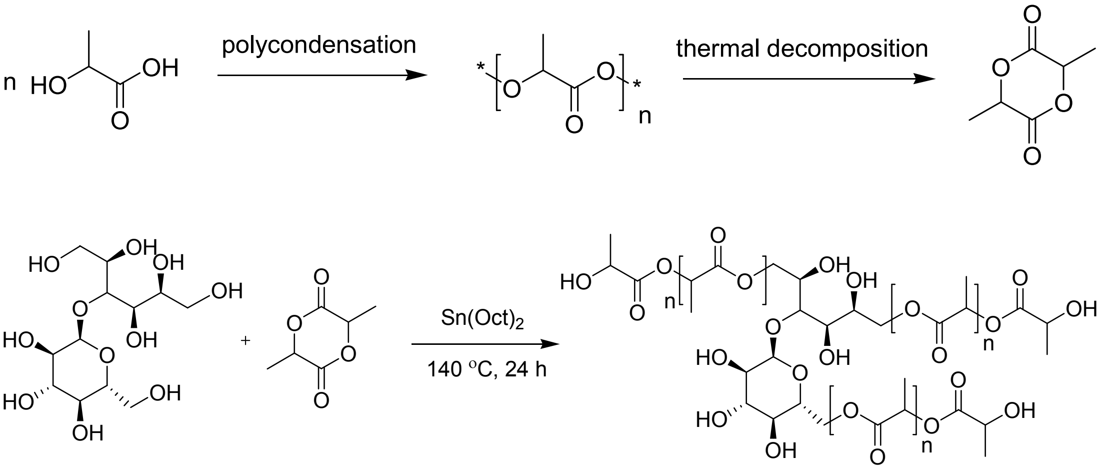


Scheme S1. Synthetic pathways of branched poly(L-lactide)-maltitol (**B-PLLA-M**)

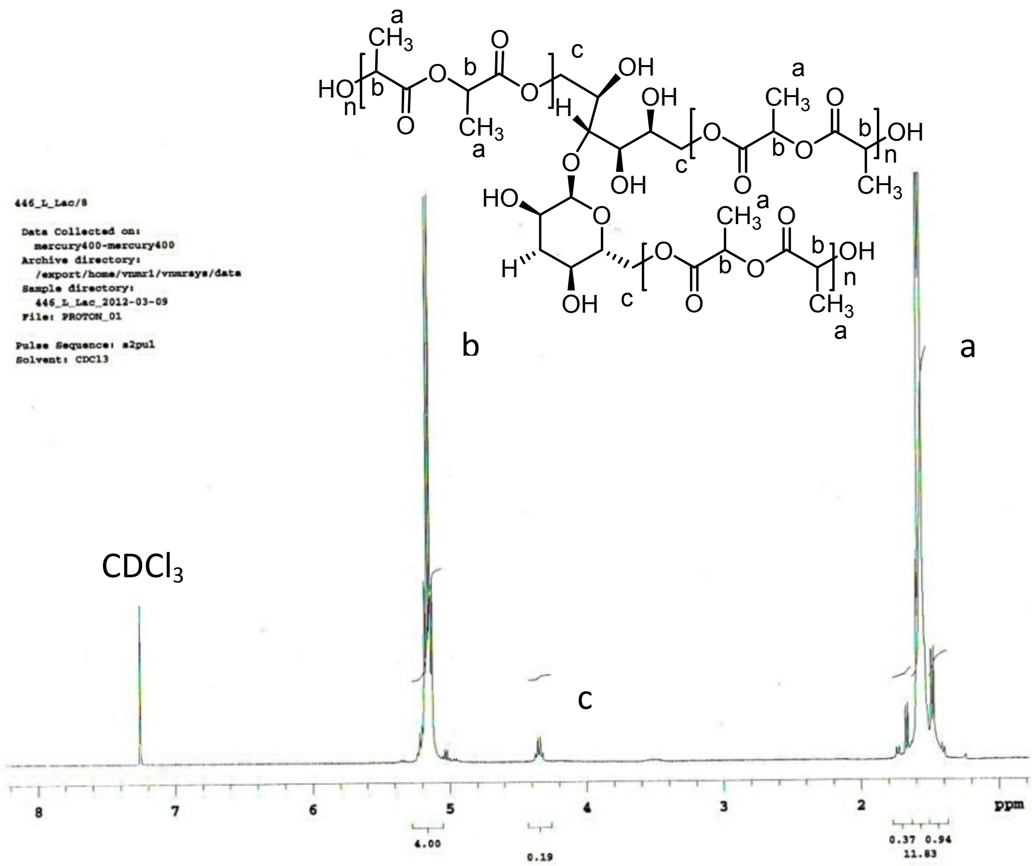


Figure S1. ^{1}H NMR spectra of branched poly(L-lactide)-maltitol

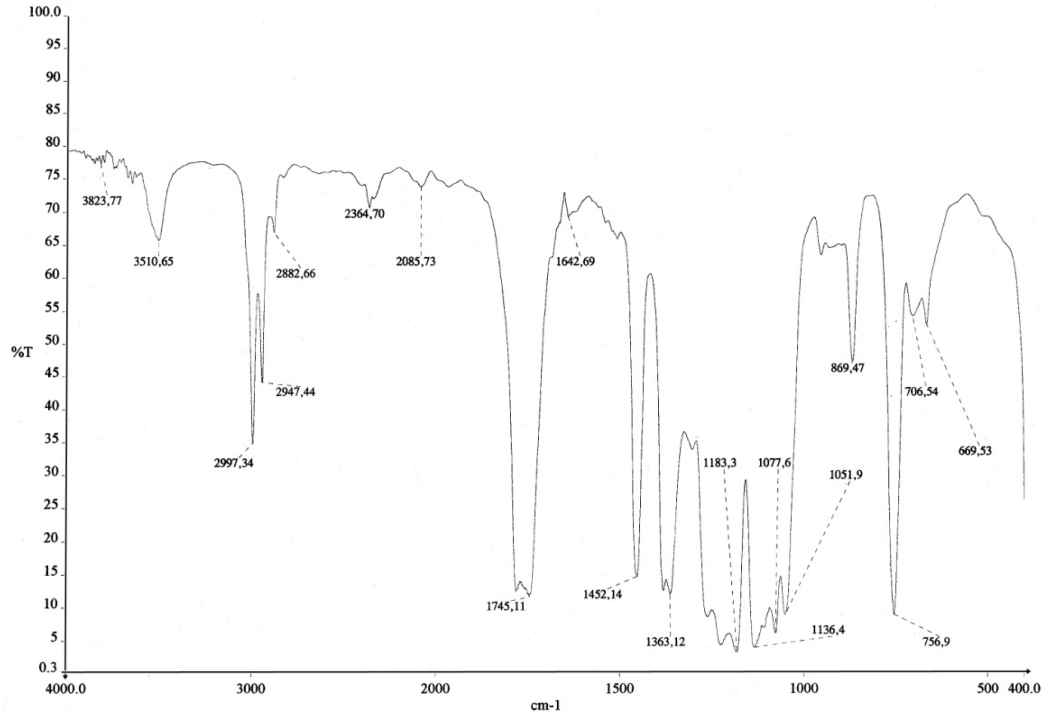


Figure S2. FTIR spectra of branched poly(L-lactide)-maltitol

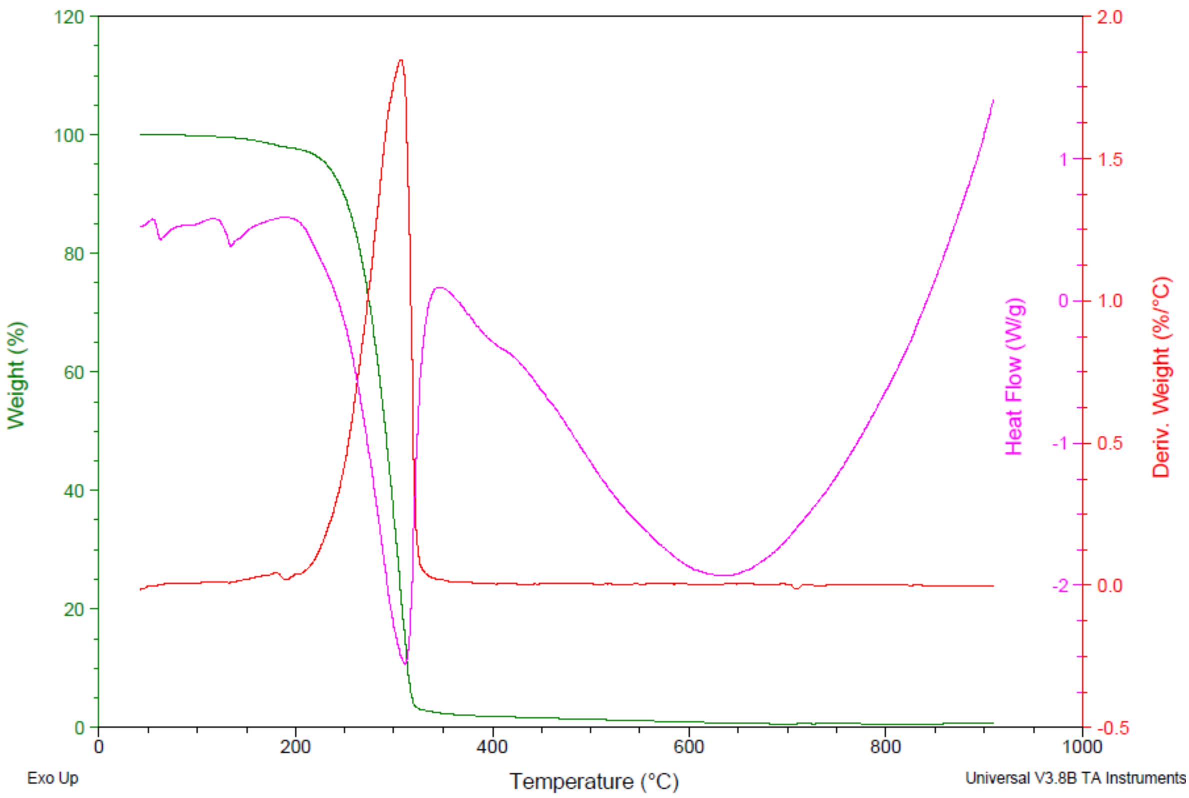


Figure S3. TGA curves of branched poly(L-lactide)-maltitol

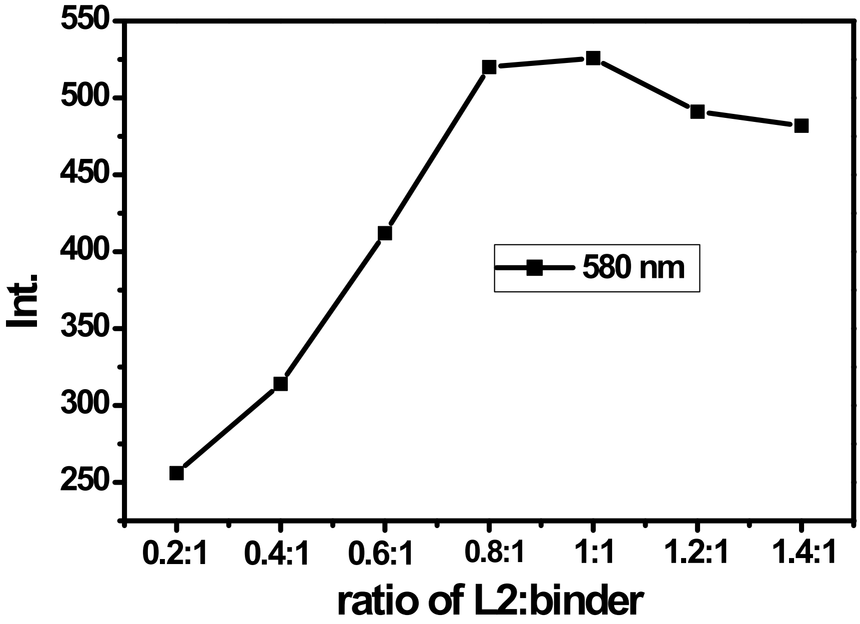
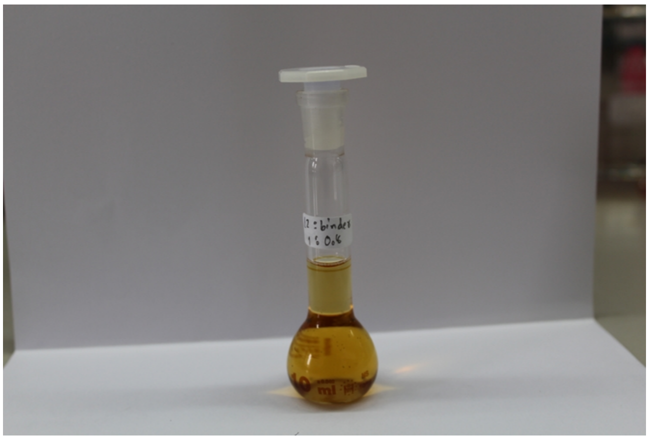


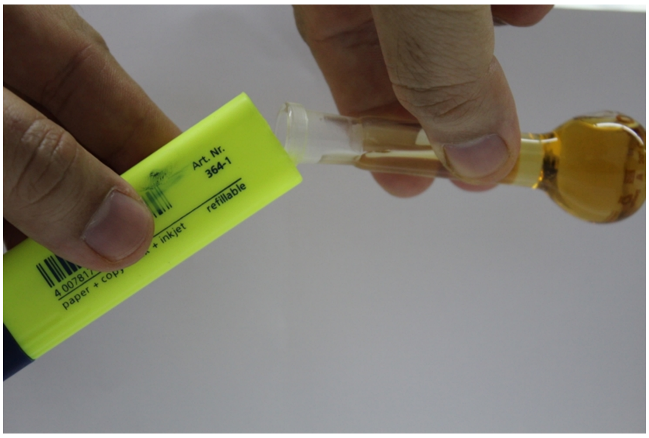
Figure S4. The variation weigh ratio of the composition of the binder (branched poly(L-lactide)-maltitol) and the chemosensor (**L2**) in the presence of Hg^{2+} 10 μM in acetone solution; λ_{ex}= 520 nm, λ_{ex}= 580 nm.

Table S1. Solubility properties of mixing components (branched poly(L-lactide)-maltitol) 0.17 g and the chemosensor (**L2**) 0.21 g in various solvent.

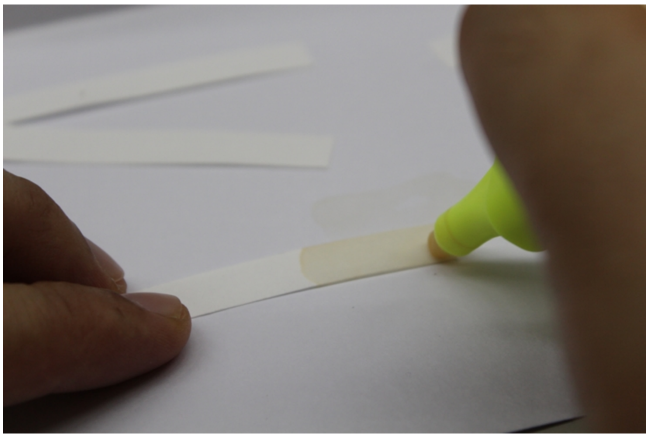
Solvent	**Mixing components**
H_2O	insoluble
Acetone	soluble
Acetonitrile	partially soluble
Chloroform	soluble
Diethyl ether	insoluble
Dimethylformamide	soluble
Ethyl acetate	partially soluble
Hexane	insoluble
Toluene	soluble
Tetrahydrofuran	soluble
Pyridine	soluble



1) mixing of three-component

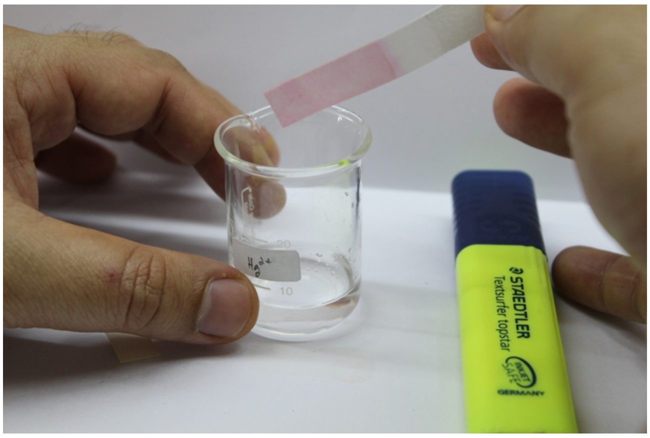


2) filling ink in highlighter pen



3) direct writing on ordinary paper

4) dipping in an aqueous solution of Hg^{2+}



5) measuring the greenish color intensity using Adobe Photoshop

Figure S5. A facile pen-on-paper paradigm of inkpen-printed based reversible biodegradable-colorimetric sensor (**IRBS**)

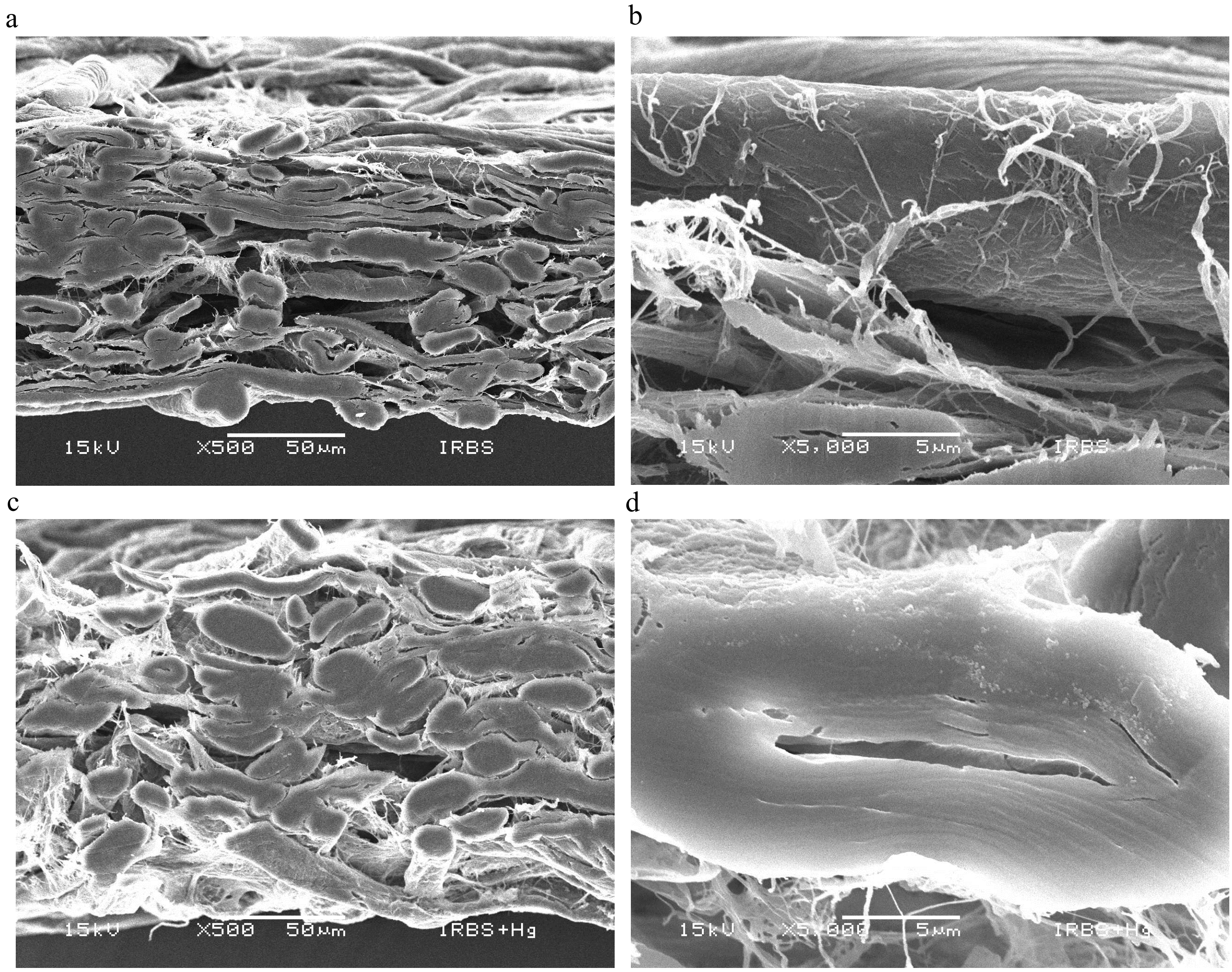


Figure S6. The cross-sectional SEM images of **IRBS** on paper (a, b) before and (c, d) after addition of Hg^{2+}.

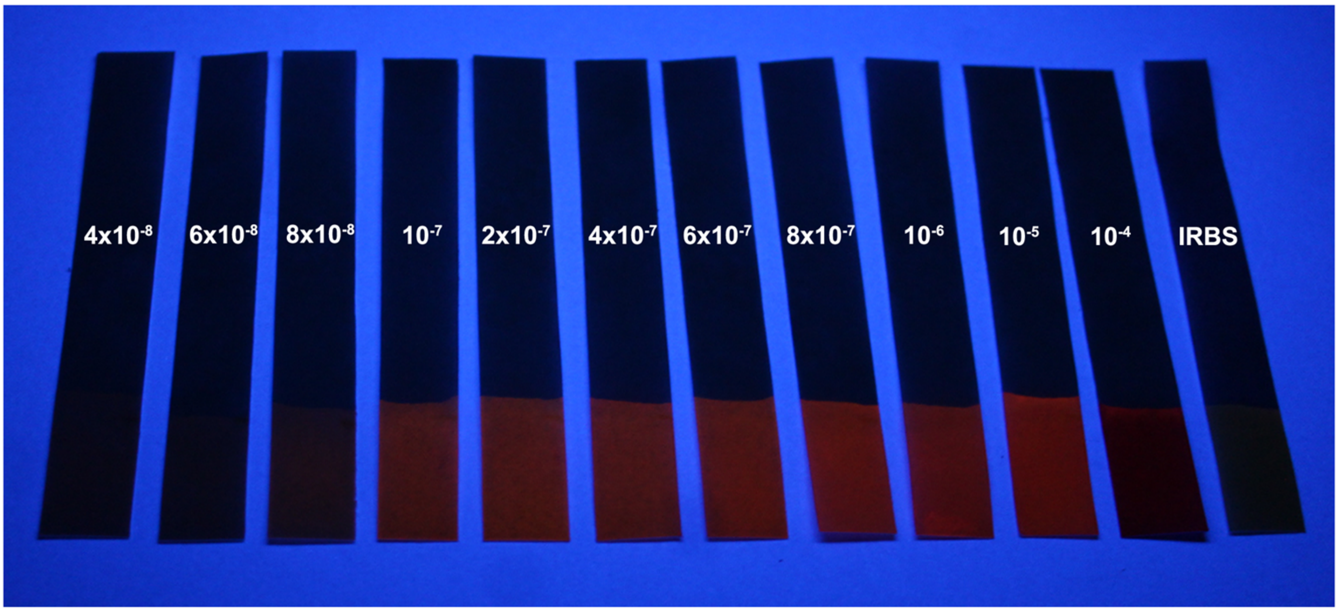


Figure S7. Fluorescence imaging observation of **IRBS** paper sensor before and after treated with Hg^{2+} ion solutions of various concentrations (4.0×10^{-8} M to 1.0×10^{-4} M).

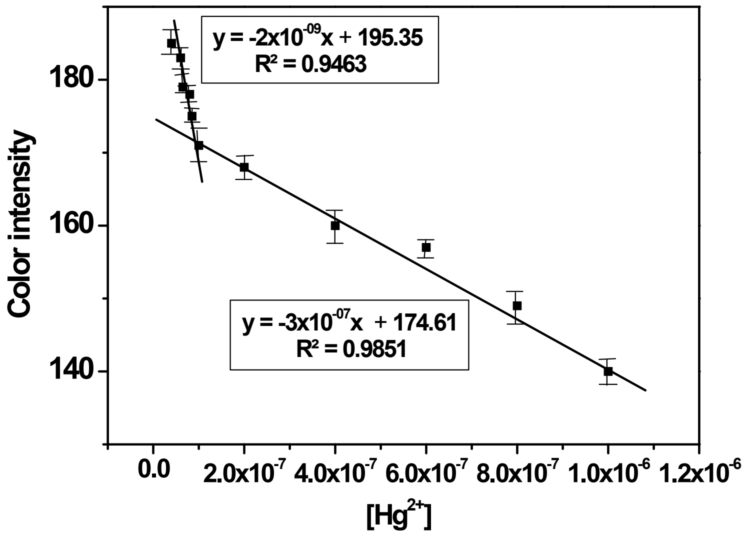


Figure S8. The response calibration curves of the **IRBS** paper sensors for detection of Hg^{2+} (average responses and standard deviation for n = 3 paper sensors).