Electronic Supplementary Material (ESI) for RSC Advances

Redox behaviour, electrochromic properties and photoluminescence of potassium lanthano phosphomolybdate sandwich-type compounds

Supporting Information

Captions to Figures

Figure S1. Infrared spectra in the range: A) 4000-500 cm^{-1} and B) 1300-600 cm^{-1} for potassium salts: (a) $Sm(PMo_{11})_2$, (b) $Eu(PMo_{11})_2$, (c) $Gd(PMo_{11})_2$, (d) $Tb(PMo_{11})_2$ and (e) $Dy(PMo_{11})_2$.

Figure S2. ^{31}P NMR spectra in D_2O of: (A) $Sm(PMo_{11})_2$, (B) $Eu(PMo_{11})_2$, (C) $Gd(PMo_{11})_2$, (D) $Tb(PMo_{11})_2$ and (E) $Dy(PMo_{11})_2$.

Figure S3. **A)** Cyclic voltammograms of K^+ salt of $Eu(PMo_{11})_2$ (5×10^{-4} mol dm^{-3}) in pH 3.0 H_2SO_4/Na_2SO_4 buffer solution at scan rates of 0.02, 0.04, 0.06, 0.08, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45 and 0.5 V s^{-1}.

B) Cyclic voltammograms of K^+ salt of $Gd(PMo_{11})_2$ (5×10^{-4} mol dm^{-3}) in pH 3.0 H_2SO_4/Na_2SO_4 buffer solution at scan rates of 0.02, 0.04, 0.06, 0.08, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45 and 0.5 V s^{-1}.

C) Cyclic voltammograms of K^+ salt of $Tb(PMo_{11})_2$ (5×10^{-4} mol dm^{-3}) in pH 3.0 H_2SO_4/Na_2SO_4 buffer solution at scan rates of 0.02, 0.04, 0.06, 0.08, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45 and 0.5 V s^{-1}.

D) Cyclic voltammograms of K^+ salt of $Dy(PMo_{11})_2$ (5×10^{-4} mol dm^{-3}) in pH 3.0 H_2SO_4/Na_2SO_4 buffer solution at scan rates of 0.02, 0.04, 0.06, 0.08, 0.1, 0.15, 0.2, 0.25, 0.3, 0.35, 0.4, 0.45 and 0.5 V s^{-1}.

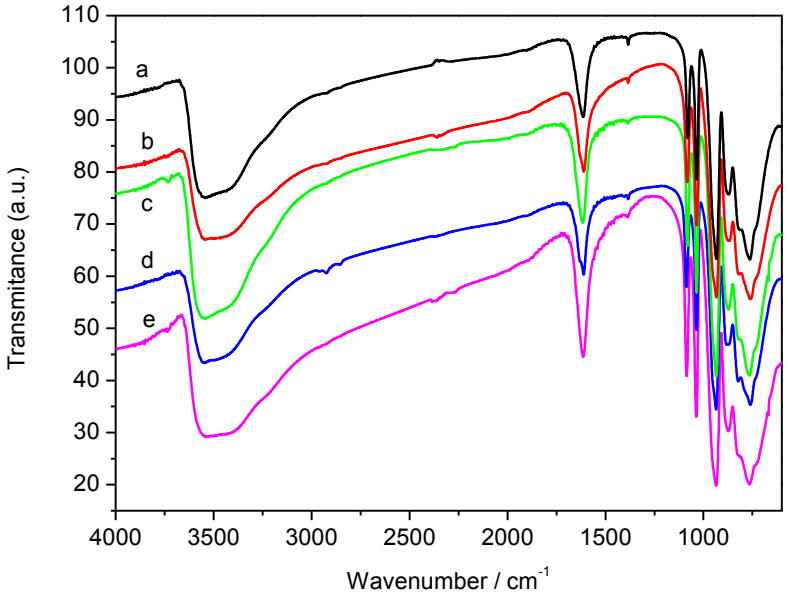
Figure S4. UV-visible spectra of $Sm(PMo_{11})_2$ (A), $Eu(PMo_{11})_2$ (C), $Gd(PMo_{11})_2$ (E) and $Dy(PMo_{11})_2$ salts (G) in pH 3.0 H_2SO_4/Na_2SO_4 buffer solution before

(a) and after reduction at 0.1 V for 30 min to 6.0 h (b to i); Absorbance evolution versus reduction time (B, D, F and H).

Figure S5. Emission decay curves acquired at (A) 10 K and (B) 300 K of EuPOM monitored at 614 nm and excited at 465 nm. The solid lines correspond to the data best fit using a single exponential function. The insets show the respective regular residual plots and the χ^2_{red} values for a better judgment of the fit quality.

Figure S1.

(A)



(B)

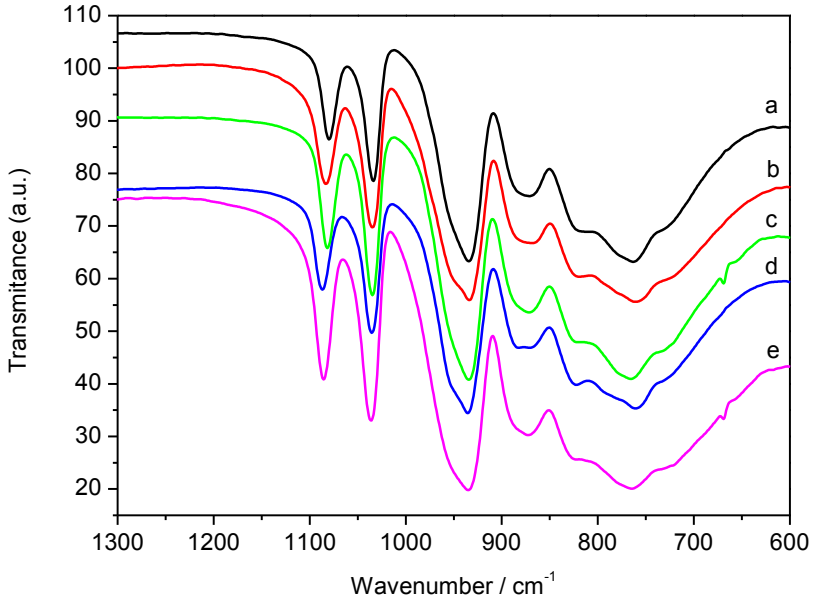


Figure S2.

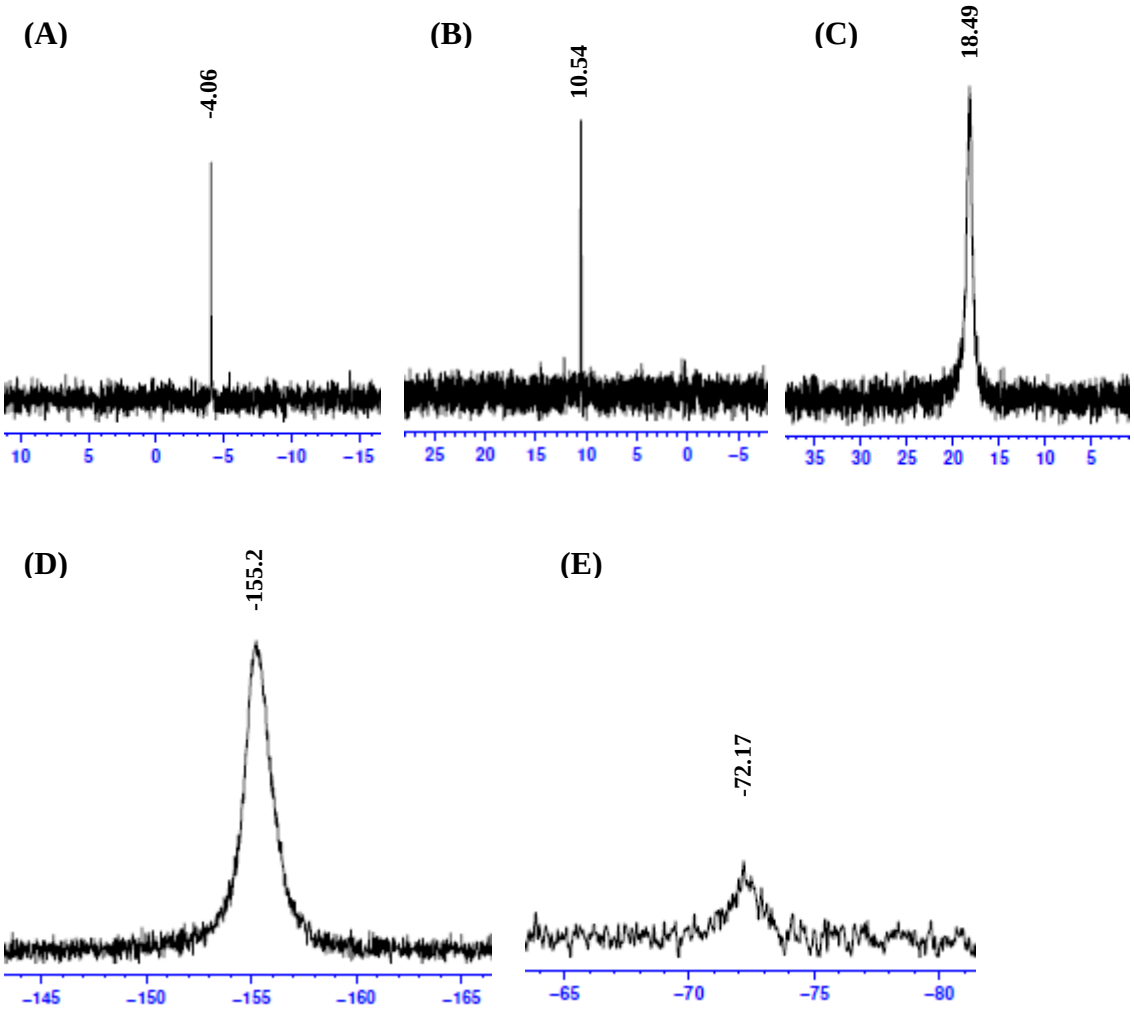
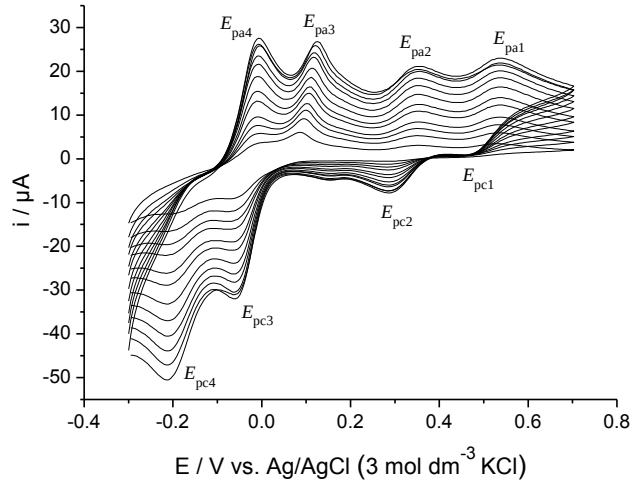


Figure S3.

(A)



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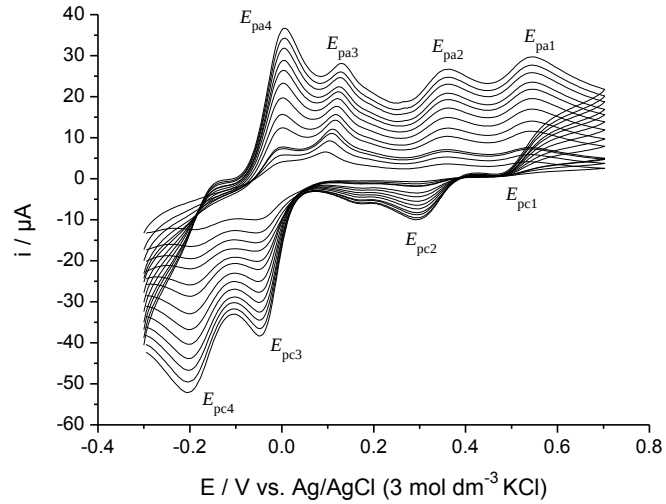
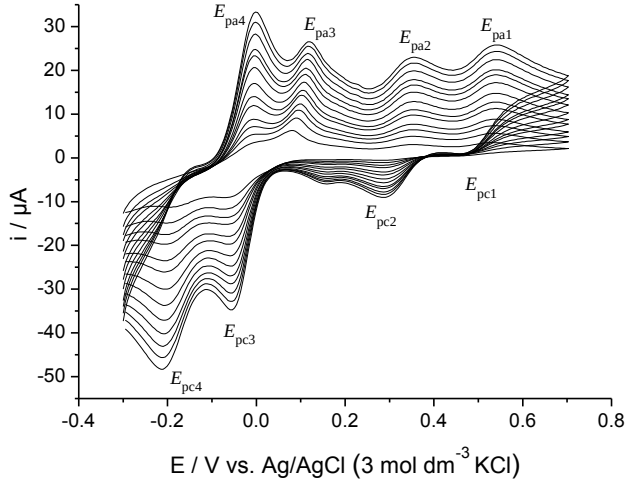


(C)



(D)

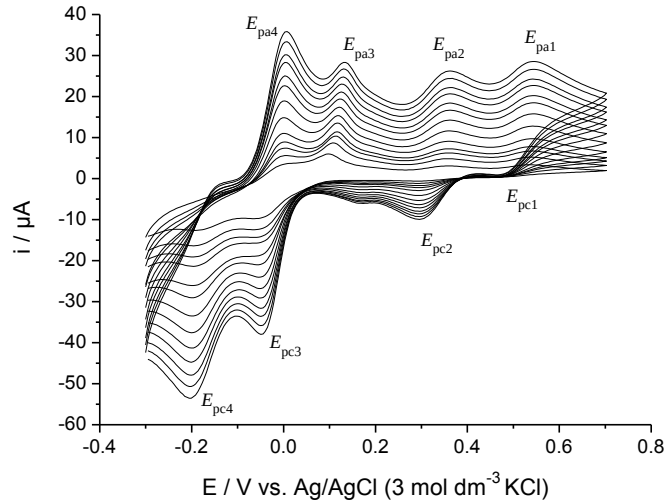
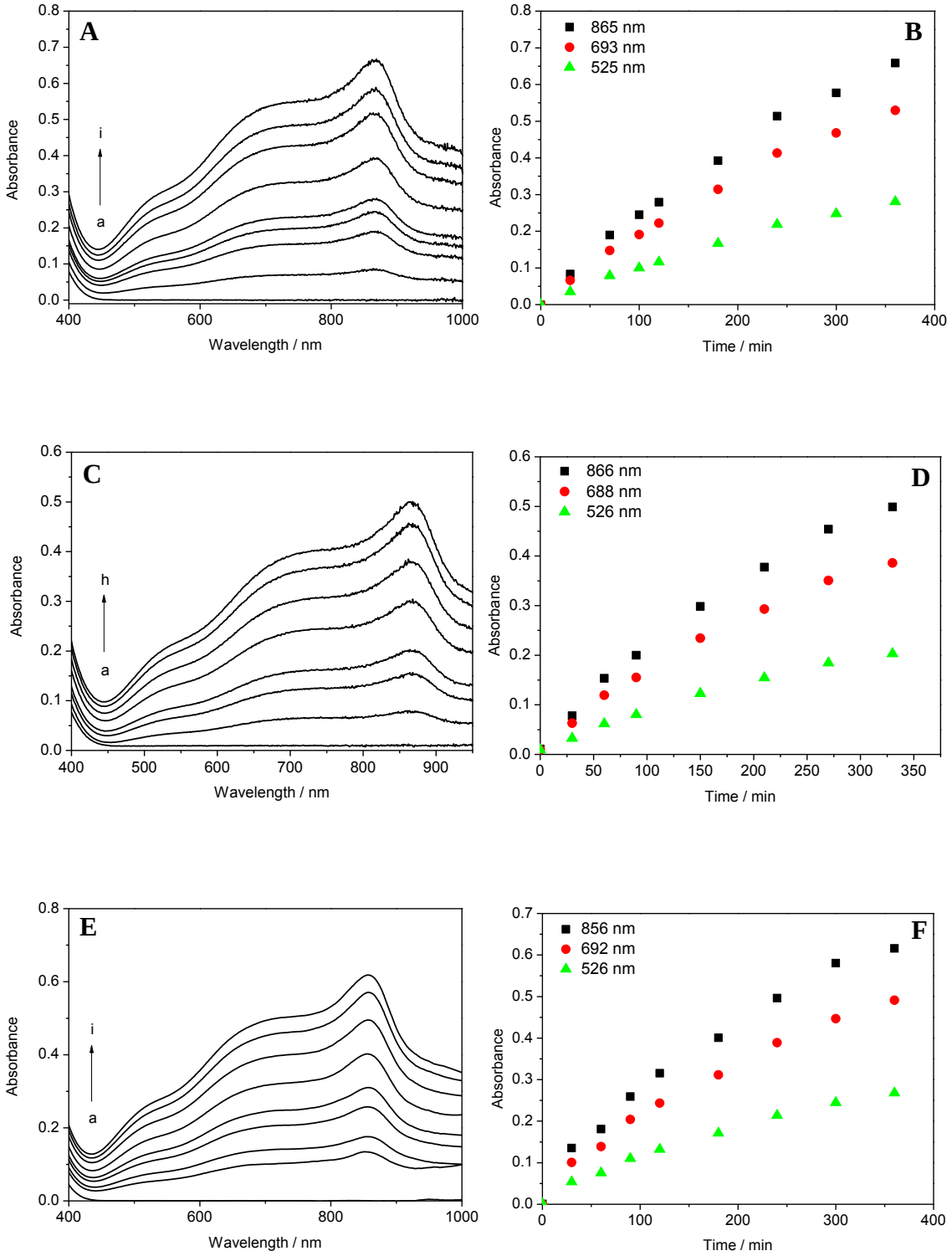


Figure S4.



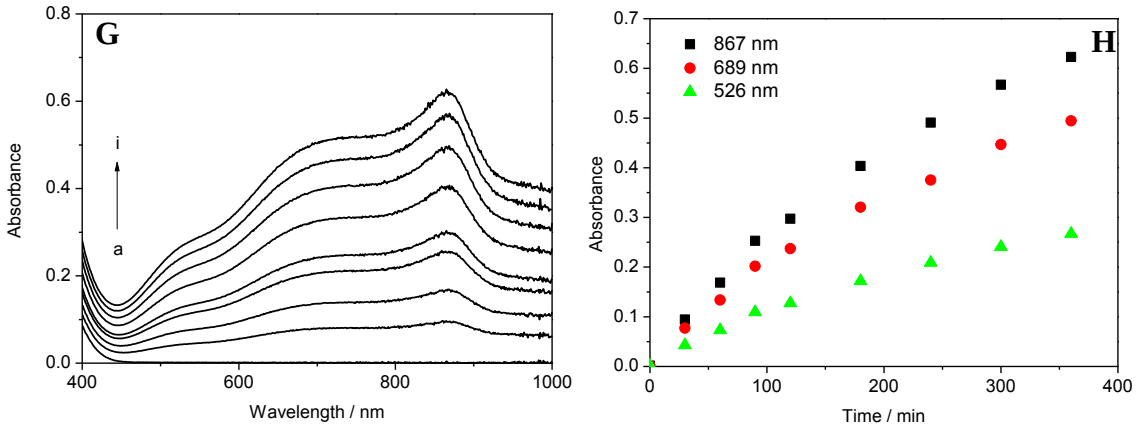


Figure S5.