

## Supplementary Information

### Phosphatase-like Activity, DNA Binding, DNA Hydrolysis, Anticancer and Lactate Dehydrogenase Inhibition activity Promoting by a New Bis-Phenanthroline Dicopper(II) Complex†

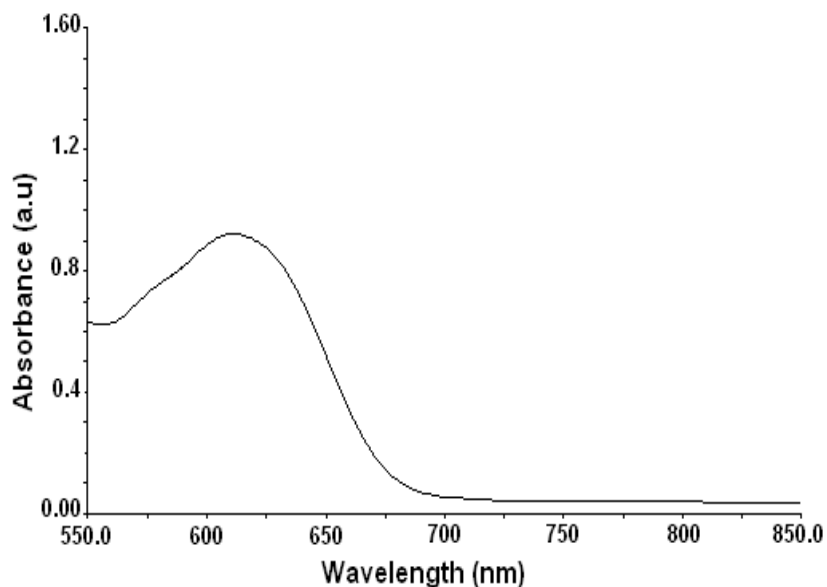
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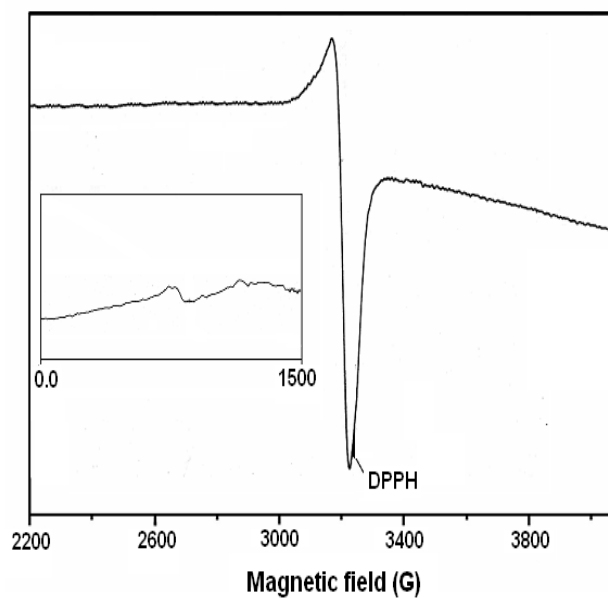
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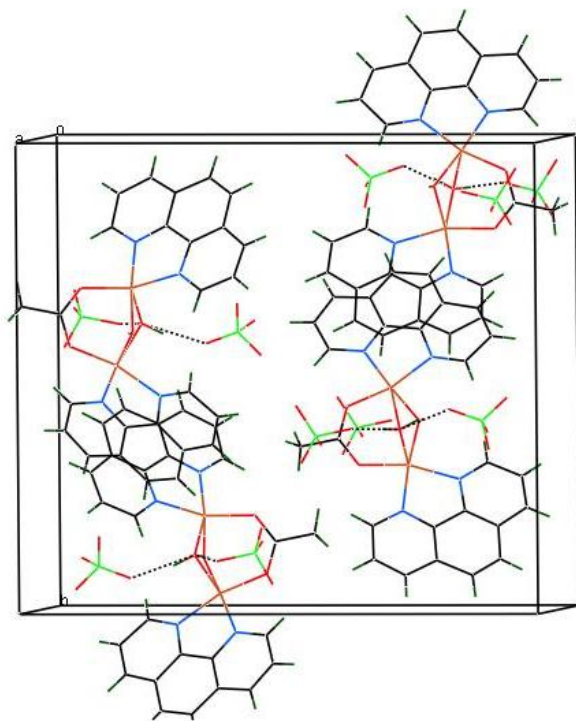
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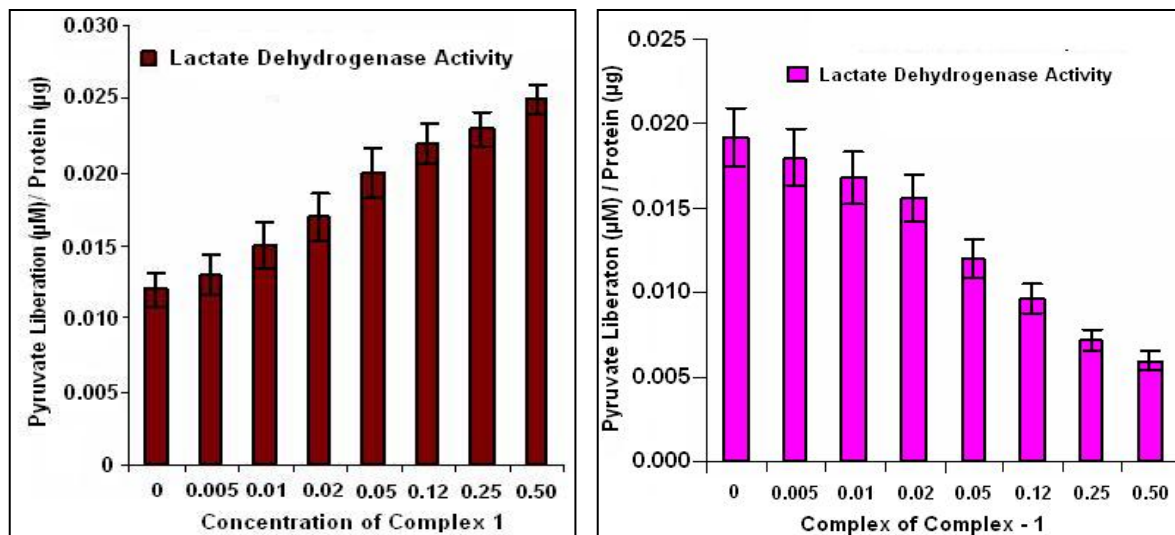
**Fig. S1.** Solid state electronic spectrum of  $[\text{Cu}_2(\mu\text{-OH}_2)(\mu\text{-CH}_3\text{COO})(\mu\text{-OH})(\text{phen})_2](\text{ClO}_4)_2$  complex (**1**).



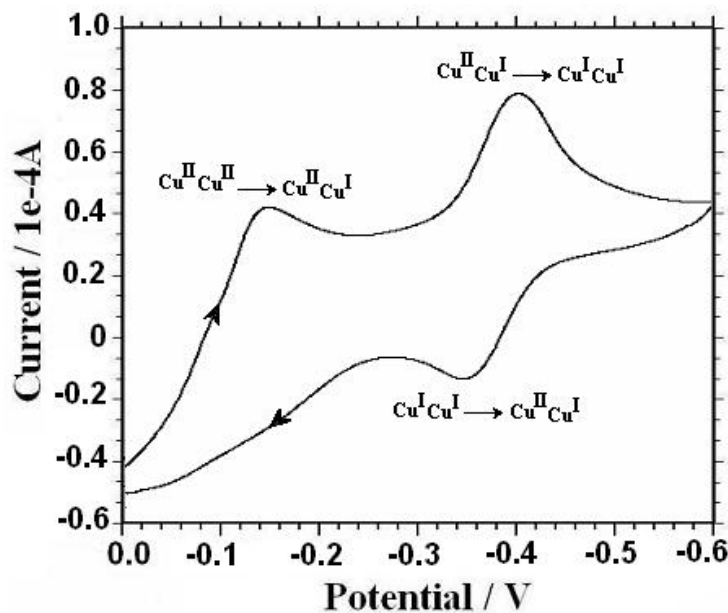
**Fig. S2.** X- band EPR spectrum of dinuclear complex **1** in MeCN at 77 K. Inset gives the EPR Showing the  $\Delta M_s = \pm 2$  transition.



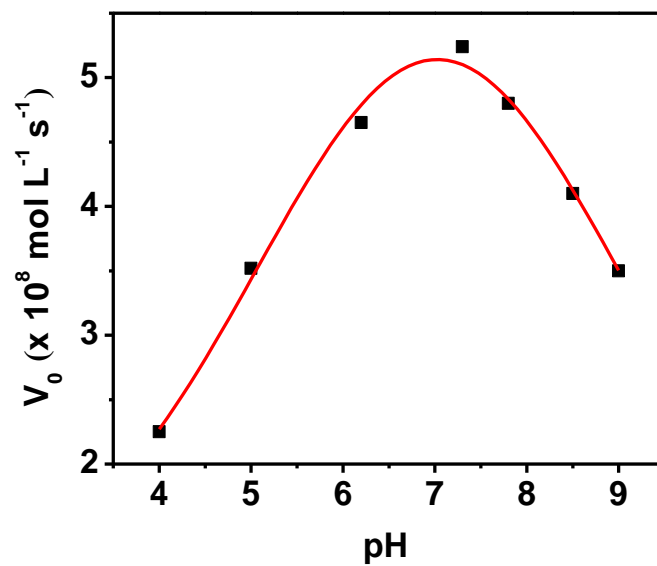
**Fig. S3.** The crystal packing of the binuclear Cu(II) complex **1**, viewed along the 'c' axis.



**Fig. S4.** Cytotoxic effect of complex-1 in MCF-7 cells assessed by lactate dehydrogenase activity in cell lysate for 48h. (b) Cytotoxic effect of complex-1 in MCF-7 cells assessed by lactate dehydrogenase activity in medium for 48h.



**Fig. S5.** Cyclic voltammogram of complex 1 measured in MeCN + 0.1 mol L<sup>-1</sup> TBAP (25 °C), using a Glassy Carbon Electrode as the working electrode.



**Fig. S6.** The pH dependence plot for the binuclear Cu(II) complex **1** on phosphate hydrolysis reaction.