Supplementary information

Comparative Structure Activity Relationship for Heterogeneous Phosphatase-like Catalytic Activities of One-Dimensional Cu(II) Coordination Polymers

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**Fig. S1** Absorption spectra for the transesterification of HPNP (100 μM) in the absence and presence of (a) complex 2 and (b) complex 3 (50 μM) in 10% MeOH recorded at an interval of 5 minutes at 30°C.
Fig. S2 $^{31}$P NMR of (a) substrate (HPNP), (b) synthesised cyclic phosphate (glycero-1,2-cyclic phosphate) and (c) substrate- catalyst reaction mixture in D$_2$O/DMSO-$d_6$ mixture (70:30).

Fig. S3. Time dependent $^{31}$P NMR spectra for HPNP hydrolysis by complex 1, in D$_2$O/DMSO-$d_6$ mixture (70:30), [HPNP]= 0.1 mM and [Complex] = 0.25 mM.
**Fig. S4** Dependence of rate of reaction on substrate concentration (50-500 μM) for complex 3 (50 μM) at 30 °C in 10% MeOH.

**Fig. S5** PXD patterns of (a) 1 and (b) 3 before catalytic experiments (black coloured) and after third cycle of catalytic experiments (blue coloured)
**Fig. S6** Reusability of complex 3 for repeated HPNP phosphate ester bond cleavage experiments.

**Table S1** Phosphotase like activities from reported complexes

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<th>Complex</th>
<th>Substrate</th>
<th>Conditions</th>
<th>$K_{cat}$ (s$^{-1}$)</th>
<th>Reference</th>
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<tr>
<td>[Ni$_2$L(H$_2$O)$_4$]$_4$H$_2$O·2ClO$_4$</td>
<td>4-NPP</td>
<td>acetonitrile–water (2.5% (v/v), 25° C)</td>
<td>$3.5 \times 10^4$</td>
<td>S1</td>
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<tr>
<td>[Zn(bpy)Cl$_2$]</td>
<td>BNPP</td>
<td>water, 25 °C</td>
<td>$5.7 \times 10^{-7}$</td>
<td>S2</td>
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<td>[Zn$_2$(L$_3$)-(μ-O$_2$CMe)$_2$(MeCN)$_2$][PF$_6$]</td>
<td>HPNP</td>
<td>MeOH-H$_2$O (33%, v/v), 30° C</td>
<td>3.44 × 10$^{-4}$</td>
<td>S3</td>
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<tr>
<td>[Zn$_2$(L)$_2$]</td>
<td>3’,5-UpU</td>
<td>water, 25 °C</td>
<td>$2.8 \times 10^{-5}$</td>
<td>S4</td>
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<td>[Cu$_2$(H$_2$patty)$\cdot$ (μ-OH)(H$_2$O)$_2$]</td>
<td>BDNPP</td>
<td>H$_2$O : MeCN : MeOH = 50 : 45 : 5, 25 °C</td>
<td>$3.95 \times 10^{-3}$</td>
<td>S5</td>
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<td>Zn$_2$(bpmp)(μ-OH)(ClO$_4$)$_2$</td>
<td>HPNP</td>
<td>DMSO-H$_2$O (30%, v/v), 25° C</td>
<td>$6.4 \times 10^{-4}$</td>
<td>S6</td>
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<tr>
<td>{[Cu$_3$(L$^1$)(NO$_3$)$_2$(DMF)(H$_2$O)]·3(DMF)}$_n$ (1)</td>
<td>HPNP</td>
<td>MeOH-H$_2$O (10%, v/v), 30° C</td>
<td>$9.6 \times 10^{-3}$</td>
<td>Present work</td>
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References