Electronic Supplementary Information (ESI)

Assembly of a series of zinc coordination polymers based on 5-functionalized
Isophthalic Acids and dipyridyl

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| Complex 1 |  |  |  |
|---|---|---|---|
| Zn1—O3\(^i\) | 1.9475 (17) | O3\(^i\)—Zn1—O1 | 103.66 (8) |
| Zn1—O1 | 1.9554 (18) | O3\(^i\)—Zn1—N2\(^ii\) | 134.60 (8) |
| Zn1—N2\(^ii\) | 2.0396 (19) | O1—Zn1—N2\(^ii\) | 108.52 (8) |
| Zn1—N1 | 2.079 (2) | O3\(^i\)—Zn1—N1 | 106.53 (8) |
| O3—Zn1\(^iii\) | 1.9475 (17) | O1—Zn1—N1 | 98.10 (8) |
| N2—Zn1\(^iv\) | 2.0396 (19) | N2\(^ii\)—Zn1—N1 | 99.76 (8) |

| Complex 2 |  |  |  |
|---|---|---|---|
| Zn1—O1 | 1.940 (2) | O1—Zn1—O3\(^i\) | 103.93 (9) |
| Zn1—O3\(^i\) | 1.9519 (18) | O1—Zn1—N2\(^ii\) | 133.05 (9) |
| Zn1—N2\(^ii\) | 2.030 (2) | O3\(^i\)—Zn1—N2\(^ii\) | 109.24 (9) |
| Zn1—N1 | 2.077 (2) | O1—Zn1—N1 | 107.76 (9) |
| O3—Zn1\(^iii\) | 1.9518 (18) | O3\(^i\)—Zn1—N1 | 97.15 (9) |
| N2—Zn1\(^iv\) | 2.030 (2) | N2\(^ii\)—Zn1—N1 | 100.15 (9) |

| Complex 3 |  |  |  |
|---|---|---|---|
| Zn1—O1 | 1.935 (2) | O1—Zn1—N1 | 129.22 (10) |
| Zn1—O3\(^i\) | 2.037 (2) | O3\(^i\)—Zn1—N1 | 104.61 (10) |
| Zn1—N1 | 2.067 (3) | O1—Zn1—N2\(^ii\) | 100.96 (10) |
| Zn1—N2\(^ii\) | 2.120 (3) | O3\(^i\)—Zn1—N2\(^ii\) | 91.88 (10) |
| Zn1—O4\(^i\) | 2.388 (2) | N1—Zn1—N2\(^ii\) | 93.95 (11) |
| O4—Zn1\(^iii\) | 2.388 (2) | O1—Zn1—O4\(^i\) | 95.82 (9) |
| O3—Zn1\(^iii\) | 2.037 (2) | O3\(^i\)—Zn1—O4\(^i\) | 58.46 (9) |
| N2—Zn1\(^iv\) | 2.120 (3) | N1—Zn1—O4\(^i\) | 94.14 (10) |
| O1—Zn1—O3\(^i\) | 122.84 (10) | N2\(^ii\)—Zn1—O4\(^i\) | 150.33 (9) |

| Complex 4 |  |  |  |
|---|---|---|---|
| Zn1—N1 | 2.104 (4) | N1—Zn1—N1\(^i\) | 94.1 (2) |
| Zn1—N1\(^i\) | 2.104 (4) | N1—Zn1—O2 | 92.97 (15) |
| Zn1—O2 | 2.173 (4) | N1\(^i\)—Zn1—O2 | 150.89 (15) |
| Zn1—O2\(^i\) | 2.173 (4) | N1—Zn1—O2\(^i\) | 150.89 (15) |
| Zn1—O1 | 2.192 (4) | N1\(^i\)—Zn1—O2 | 92.97 (15) |
| Bond                  | Distance (Å) | Angle (°) |
|----------------------|--------------|-----------|
| Zn1—O1               | 2.192 (4)    | 94.5 (2)  |
| N1—Zn1—O1           | 101.89 (16)  | 101.89 (15) |
| N1—Zn1—O1           | 91.19 (15)   | 106.17 (15) |
| O2—Zn1—O1           | 59.71 (14)   | 59.71 (14) |
| O2—Zn1—O1           | 106.17 (15)  | 160.9 (2)  |
| N1—Zn1—O1           | 91.19 (15)   |           |

Complex 5

| Bond                  | Distance (Å) | Angle (°) |
|----------------------|--------------|-----------|
| Zn1—O1               | 1.979 (3)    | 102.12 (12) |
| Zn1—O3               | 1.984 (3)    | 108.51 (13) |
| Zn1—N2               | 2.030 (3)    | 111.52 (13) |
| Zn1—N1               | 2.043 (3)    | 106.84 (13) |
| O3—Zn1               | 1.984 (3)    | 104.43 (13) |
| N2—Zn1               | 2.030 (3)    | 121.63 (14) |
| N1—Zn1—O1           | 118.42 (9)   |           |

Complex 6

| Bond                  | Distance (Å) | Angle (°) |
|----------------------|--------------|-----------|
| Zn1—O1               | 1.9264 (19)  | 126.47 (9) |
| Zn1—O3               | 1.938 (2)    | 96.08 (9)  |
| Zn1—N1               | 2.048 (2)    | 96.08 (9)  |
| Zn1—N2               | 2.068 (3)    | 103.52 (10)|
| O3—Zn1               | 1.938 (2)    | 104.93 (10)|
| O1—Zn1—O3           | 118.42 (9)   |           |

Complex 7

| Bond                  | Distance (Å) | Angle (°) |
|----------------------|--------------|-----------|
| Zn1—O1               | 1.978 (2)    | 107.55 (10)|
| Zn1—O4               | 1.980 (2)    | 109.19 (11)|
| Zn1—N2               | 2.035 (2)    | 107.61 (10)|
| Zn1—N1               | 2.037 (2)    | 106.73 (11)|
| O4—Zn1               | 1.980 (2)    | 121.71 (11)|
| O1—Zn1—O4           | 102.39 (10)  |           |

Complex 8

| Bond                  | Distance (Å) | Angle (°) |
|----------------------|--------------|-----------|
| Zn1—O3               | 1.9094 (17)  | 121.25 (8) |
| Zn1—O1               | 1.9605 (16)  | 100.42 (8) |
Zn1—O2\textsuperscript{ii} & 1.9831 (17) & O1—Zn1—O2\textsuperscript{ii} & 114.99 (7) \\
Zn1—N1 & 2.0458 (19) & O3\textsuperscript{i}—Zn1—N1 & 119.54 (8) \\
O2—Zn1\textsuperscript{ii} & 1.9831 (17) & O1—Zn1—N1 & 98.95 (8) \\
O3—Zn1\textsuperscript{iii} & 1.9095 (17) & O2\textsuperscript{ii}—Zn1—N1 & 100.54 (7) \\

Symmetry codes, for 1: (i) x-1/2, -y+3/2, z-1/2; (ii) -x+1/2, y+1/2, -z+1/2; (iii) x+1/2, -y+3/2, z+1/2; (iv) -x+1/2, y-1/2, -z+1/2; for 2: (i) x+1/2, -y+3/2, z+1/2; (ii) -x+1/2, y+1/2, -z+1/2; (iii) x-1/2, -y+3/2, z-1/2; (iv) -x+1/2, y-1/2, -z+1/2; for 3: (i) x, -y+1/2, z+1/2; (ii) -x+1, y+1/2, z+1/2; (iii) x, -y+1/2, z-1/2; (iv) -x+1, y+1/2, z-1/2; for 4: (i) -x+1/2, y, -z+1/2; (ii) x, -y+1, -z+1; (iii) -x+1, y, z; for 5: (i) x+1, y, z+1; (ii) x+1, y, z; (iii) -x+1, -y+3, -z+1; (iv) -x, -y+1, -z+1; for 6: (i) x+1, y, z; (ii) x+1, y, z; (iii) -x+1, -y+3, -z+1; (iv) -x, -y+1, -z+1; for 7: (i) x+1, y+1, z; (ii) x+1, y+1, z; (iii) -x+1, -y+1, -z; (iv) -x+3, -y, -z; for 8: (i) x+1/2, y-1/2, z; (ii) -x, y, -z+1/2; (iii) x-1/2, y+1/2, z; (iv) -x, -y+2, -z.

**Fig. S1.** View of the 1D zigzag chains constructed by bpy and Zn(II) in 1 and 2.

**Fig. S2.** View of the 1-D chain constructed by \(^*\)BuOip and Zn(II) in 3.
Fig. S3. View of the 1-D chain constructed by PeOip and Zn(II) in 4.

Fig. S4. View of the 1-D chain constructed by EtOip and Zn(II) in 5.

Fig. S5. View of the 1-D chain constructed by PrOip and Zn(II) in 6.

Fig. S6. View of the 1-D chain constructed by BuOip and Zn(II) in 7.
Fig. S7. View of a dinuclear [Zn₂(“PeOip)₂] unit in 8.
Fig. S8. FT-IR spectrum for 1 (a); 2 (b); 3 (c); 4 (d); 5 (e); 6 (f); 7 (g) and 8 (h).
Fig. S9. Powder XRD patterns for 1 (a); 2 (b); 3 (c); 4 (d); 5 (e); 6 (f); 7 (g) and 8 (h). Black: simulated from single crystal analysis and experimental; Red: as synthesized.