The use of a semi-flexible bipyrimidyl ligand for the construction of

azide-based coordination polymers: structural diversities and

magnetic properties

Zu-Zhen Zhang,^a Gene-Hsiang Lee^b and Chen-I Yang*^a

^a Department of Chemistry, Tunghai University, Taichung 407, Taiwan

^b Department of Chemistry, National Taiwan University, Taipei, 106, Taiwan

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Fig. S1. Thermogravimetric (TG) analysis diagram of compound 1–4.





Fig. S2. Simulated PXRD pattern (red) and experimental PXRD pattern of compound 1–4.



Fig. S3. Perspective view of interlayer Ni…Ni distances in 4 (dashed line).



Fig. S4. Plot of $\chi_{M}^{-1}(\circ)$ vs. temperature for a microcrystalline sample of compound **1**. The solid line represents the best fit χ_{M}^{-1} above 50 K with a Curie–Weiss law.



Fig. S5. In phase (χ') and out-off phase (χ'') polts of ac magnetic susceptibilities in a zero applied dc field and in an ac field of 3.5 G at the indicated frequencies for a microcrystalline sample of compound 1.



Fig. S6. Plot of χ_{M}^{-1} (\circ) vs. temperature for a microcrystalline sample of compound **2**. The solid line represents the best fit χ_{M}^{-1} above 50 K with a Curie–Weiss law.



Fig. S7. ZFC/FC magnetizations of compound 2 at the field of 20 Oe.



Fig. S8. χ' and χ'' plots of ac magnetic susceptibilities in a zero applied dc field and in an ac field of 3.5 G at the indicated frequencies for a microcrystalline sample of compound **2**.



Fig. S9. A blow-up of the hysteresis loop of compound 2 at the 2.0 K.



Fig. S10. FC magnetization curves measured under the indicated external fields for compound 2.



Fig. S11. Field dependence of magnetizations for compound 2 measured at the indicated temperatures.



Fig. S12. dM/dH vs. H plots for the virgin magnetization of compound 2.



Fig. S13. Magnetic phase (*T*, *H*) diagram for **2**, the data from location of the maximum of susceptibility from χ_M vs *T* data (open black square), location of the maximum of susceptibility from dM/dH vs *H* data (open red cycle), and location of the maximum of χ_M' from ac data (open blue triangle); the solid line is a guide.



Fig. S14. Plot of $\chi_{M}^{-1}(\circ)$ vs. temperature for a microcrystalline sample of compound **3**. The solid line represents the best fit χ_{M}^{-1} above 50 K with a Curie–Weiss law.



Fig. S15. Field dependence of the magnetization of 3 at 2.0 K.



Fig. S16. Plot of χ_{M}^{-1} (\circ) vs. temperature for **4**. The solid line represents the best fit χ_{M}^{-1} above 170 K with a Curie–Weiss law.



Fig. S17. ZFC/FC magnetizations of compound 4 at the field of 50 Oe.



Fig. S18. χ' and χ'' plots of ac magnetic susceptibilities in a zero applied dc field and in an ac field of 3.5 G at the indicated frequencies for a microcrystalline sample of compound 4.



Fig. S19. A blow-up of the hysteresis loop of compound 4.



Fig. S20. FC magnetization curves measured under the indicated external fields for compound 4.



Fig. S21. Field dependence of magnetizations for 4 measured at the indicated temperatures.



Fig. S22. dM/dH vs. *H* plots for the virgin magnetization of compound **4**.



Fig. S23. Magnetic phase (*T*, *H*) diagram for **4**, the data from location of the maximum of susceptibility from χ_M vs *T* data (open blue cycle), location of the maximum of susceptibility from dM/dH vs *H* data (open red square), and location of the maximum of χ_M' from ac data (open green triangle); the solid line is a guide.