Supplementary Data

Article

Heterometallic Chain Compounds of Tetrakis(μ-carboxylato)diruthenium and Tetracyanidoaurate

Masahiro Mikuriya [1,*], Yusuke Tanaka [1], Daisuke Yoshioka [1], Motohiro Tsuboi [1], Hidekazu Tanaka [2], and Makoto Handa [2,*]

[1] School of Biological and Environmental Sciences, Kwansei Gakuin University, 2-1 Gakuen, Sanda 669-1337, Japan; you06you15@gmail.co.jp (Y.T.); yoshi0431@gmail.com (D.Y); tsuboimot@kwansei.ac.jp (M.T.)

[2] Department of Chemistry, Graduate School of Natural Science and Technology, Shimane University, Matsue 690-8504, Japan; hidekazu@riko.shimane-u.ac.jp (H.T.); handam@riko.shimane-u.ac.jp (M.H.)

* Correspondence: junpei@kwansei.ac.jp

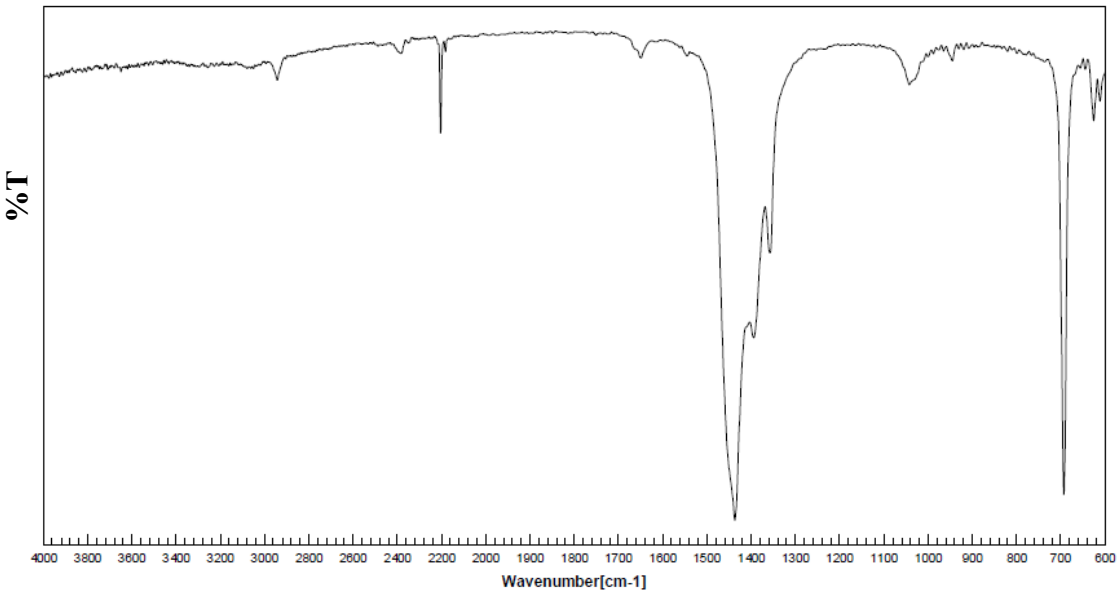

Figure S1. Infrared spectra of $[Ru_2(CH_3COO)_4Au(CN)_4]_n$ (**1**),

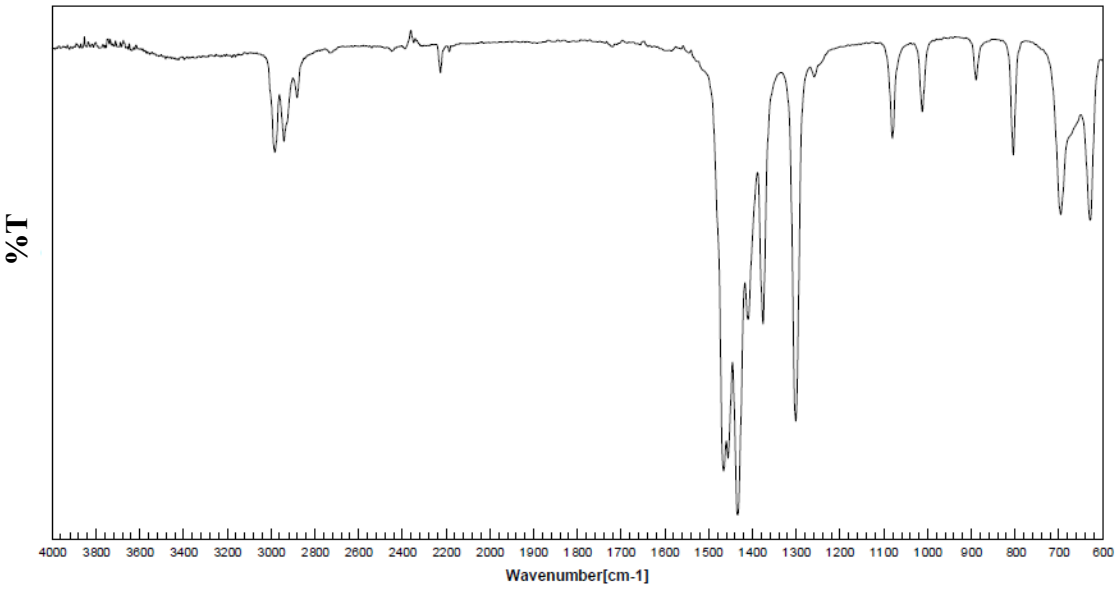

Figure S2. Infrared spectra of $[Ru_2(C_2H_5COO)_4Au(CN)_4]_n$ (**2**).

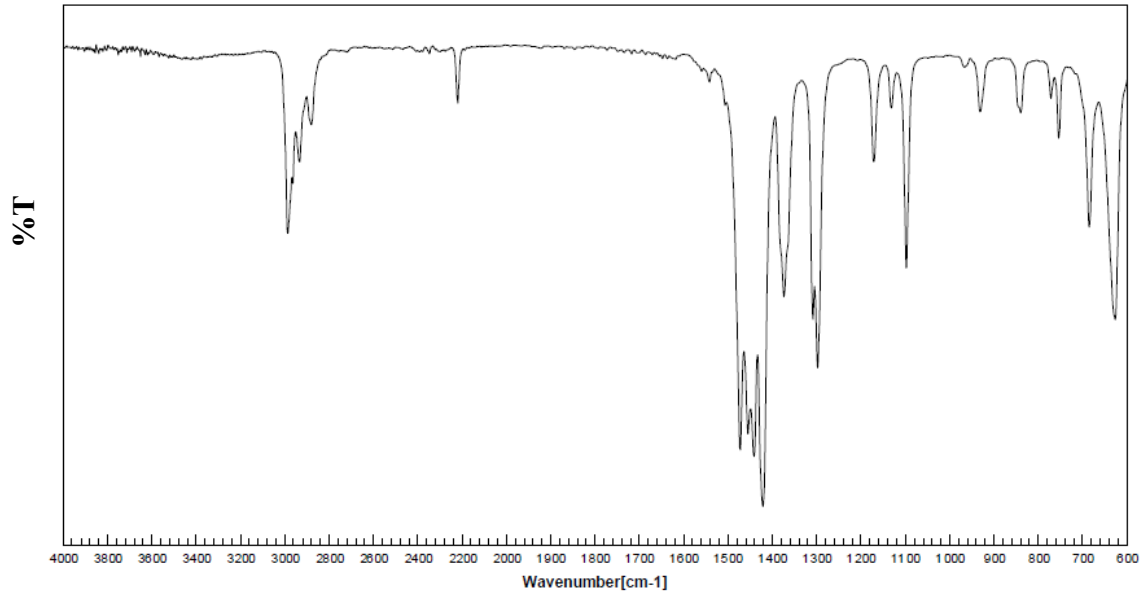

Figure S3. Infrared spectra of $[Ru_2(i\text{-}C_3H_7COO)_4Au(CN)_4]_n$ (**3**).

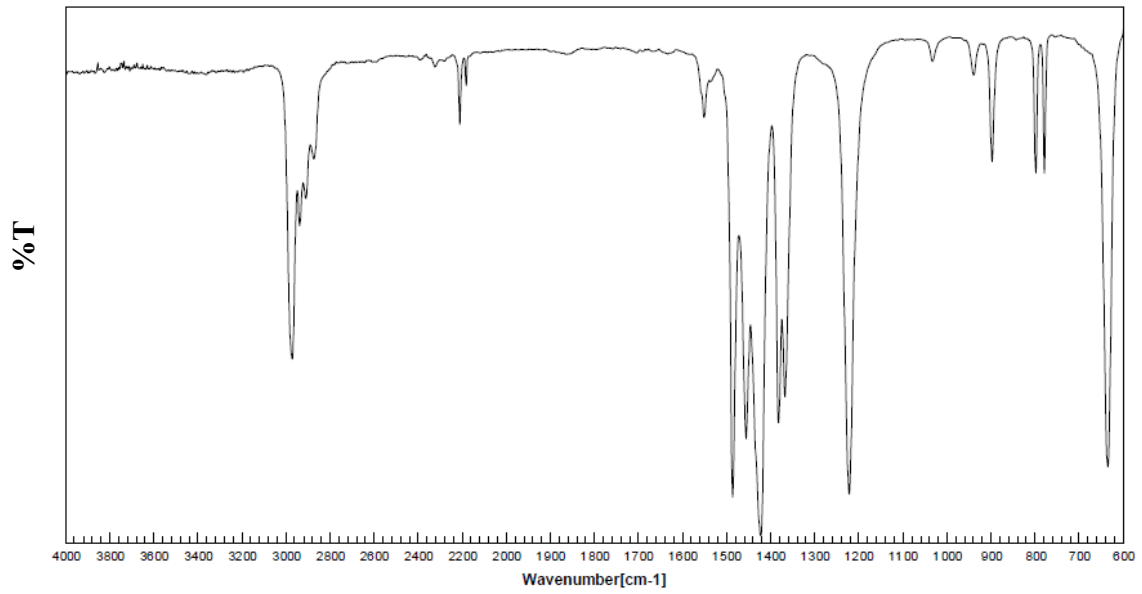

Figure S4. Infrared spectra of $[Ru_2(t\text{-}C_4H_9COO)_4Au(CN)_4]_n$ (**4**)

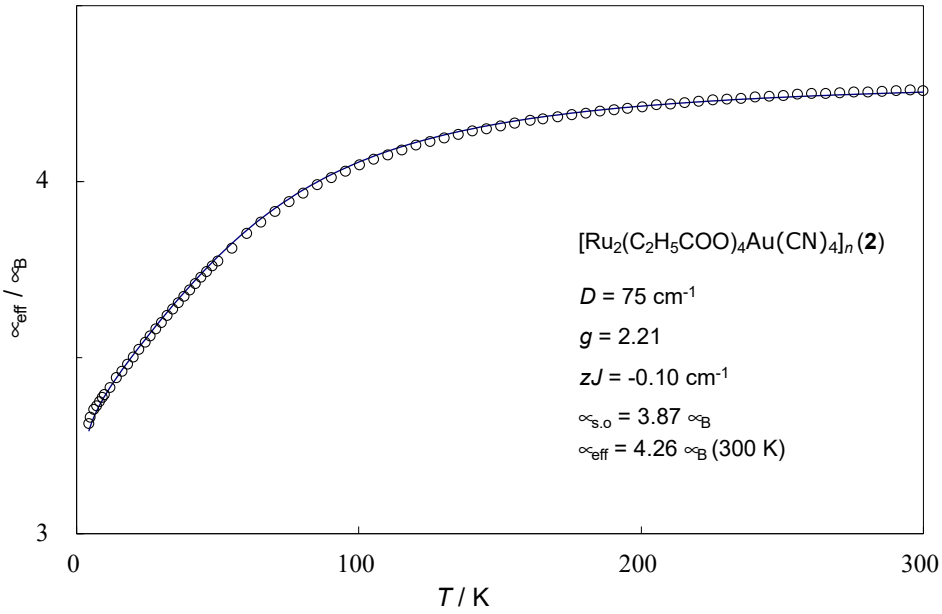

Figure S5. Variable temperature of magnetic moment μ_{eff} for $[Ru_2(C_2H_5COO)_4Au(CN)_4]_n$ (**2**). The solid black line was calculated and drawn with the parameter values described in the text.

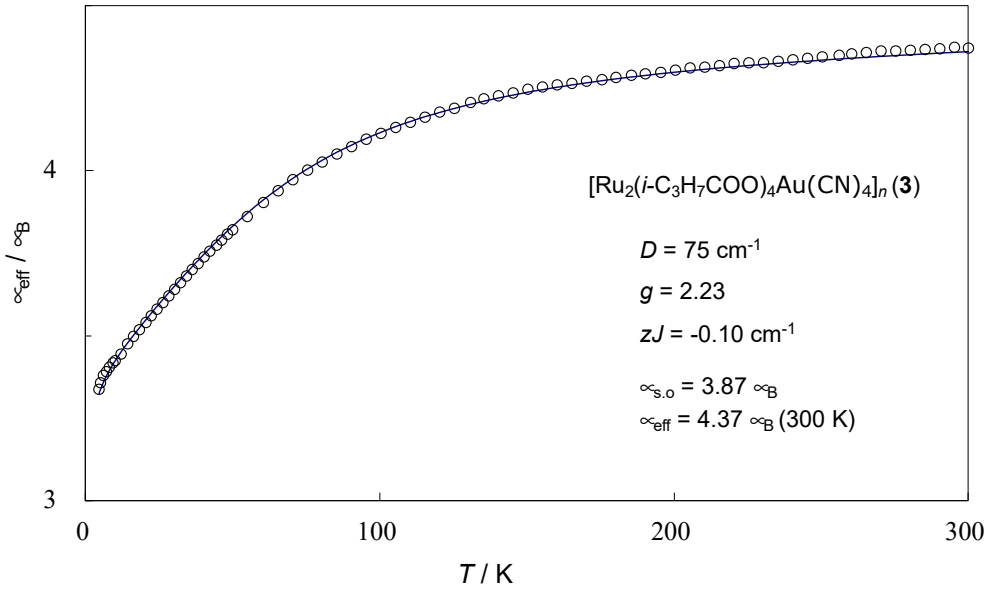

Figure S6. Variable temperature of magnetic moment μ_{eff} for $[Ru_2(i\text{-}C_3H_7COO)_4Au(CN)_4]_n$ (**3**). The solid black line was calculated and drawn with the parameter values described in the text.

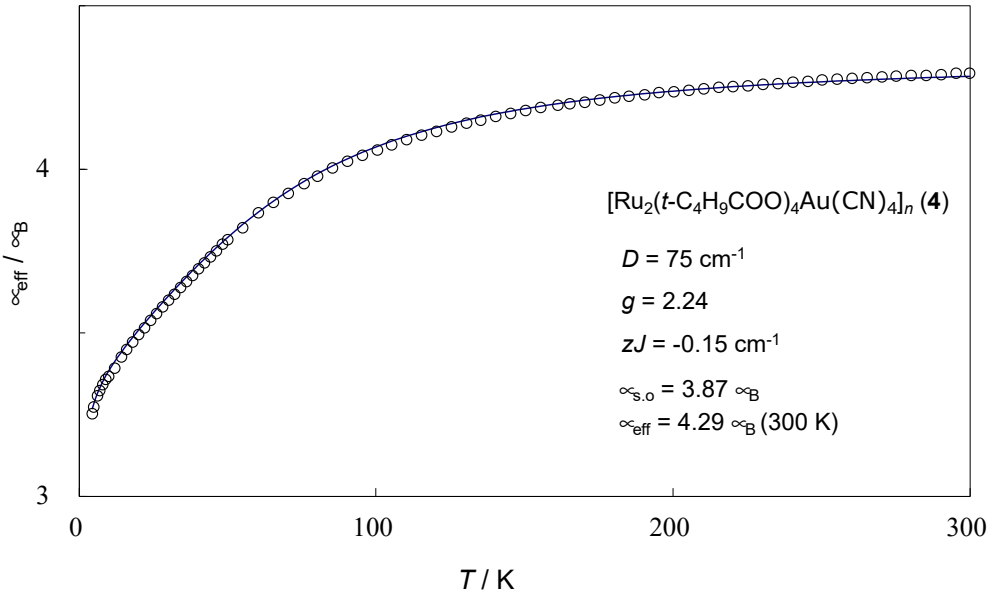

Figure S7. Variable temperature of magnetic moment μ_{eff} for $[Ru_2(t\text{-}C_4H_9COO)_4Au(CN)_4]_n$ (**4**). The solid black line was calculated and drawn with the parameter values described in the text.

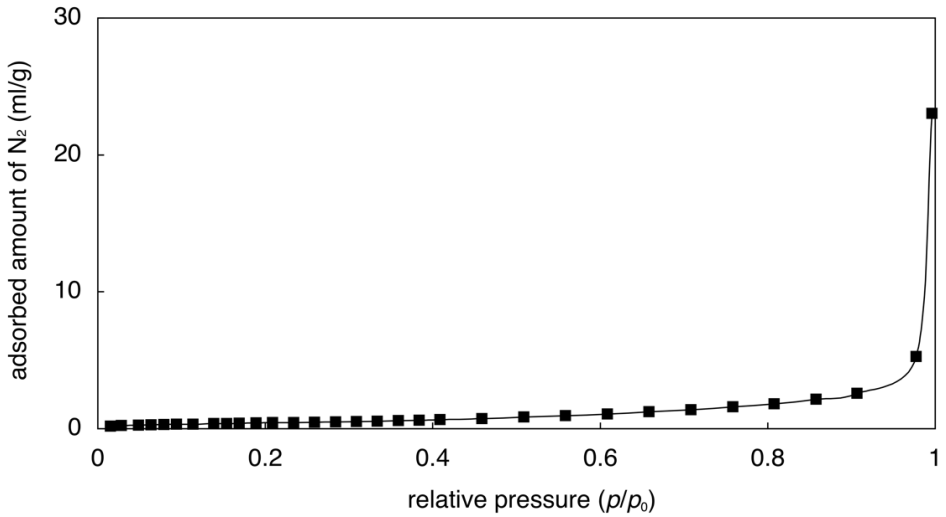

Figure S8. Nitrogen adsorption isotherm of $[Ru_2(C_2H_5COO)_4Au(CN)_4]_n$ (**2**). Solid line is guide for the eye.

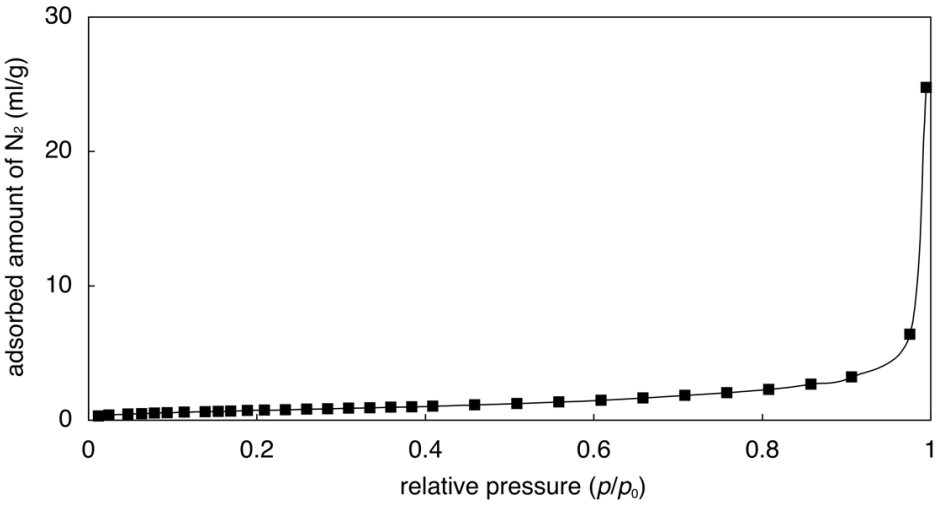

Figure S9. Nitrogen adsorption isotherm of $[Ru_2(i\text{-}C_3H_7COO)_4Au(CN)_4]_n$ (**3**). Solid line is guide for the eye.

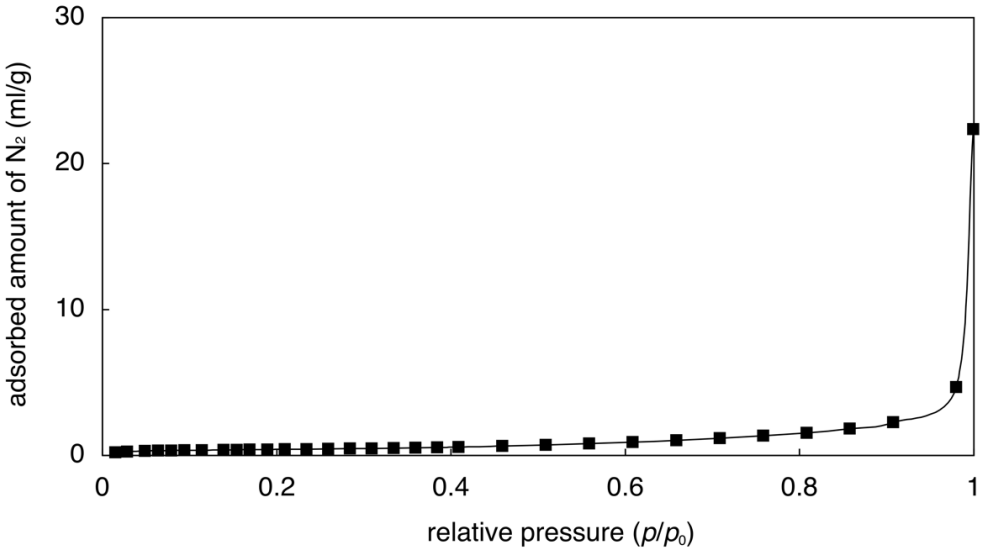

Figure S10. Nitrogen adsorption isotherm of $[Ru_2(t\text{-}C_4H_9COO)_4Au(CN)_4]_n$ (**4**). Solid line is guide for the eye.

Table S1. Some selected structural parameters of the present complexes **1–4**.

Com-plexes	Ru–Ru / Å	Au-C / Å	Ru-O_{eq} (RCO_2^-) / Å	Ru-N_{ax} / Å	Ru-Ru-N_{ax} / °
1	Ru1-Ru1^{ii} 2.2695(7) ii: (*x*, *x*-*y*, 7/6-*z*)	Au1-C7 1.991(4) Au1-C7^{i} 1.991(4) Au1-C8 2.003(7) Au1-C9 2.008(7) i: (2-*x*, 1-*x*+*y*, 5/3-*z*)	Ru1-O1 2.023(3) Ru1-O2 2.010(3) Ru1-O3^{ii} 2.014(3) Ru1-O4 2.020(3)	Ru1-N1 2.286(3)	Ru1^{ii}-Ru1-N1 172.34(9)
2	Ru1-Ru2 2.2665(3)	Au1-C13 1.999(3) Au1-C14 2.005(3) Au1-C15 2.001(3) Au1-C16 1.995(3)	Ru1-O1 2.033(2) Ru1-O3 2.024(2) Ru1-O5 2.029(2) Ru1-O7 2.009(2) Ru2-O2 2.022(2) Ru2-O4 2.017(2) Ru2-O6 2.021(2) Ru2-O8 2.023(2)	Ru1-N1 2.263(3) Ru2-N4^{i} 2.264(3) i: (*x*-1/2, 1/2-*y*, 1/2+*z*)	Ru1-Ru2-N4^{i} 175.67(6) Ru2-Ru1-N1 174.96(7)
3	Ru1-Ru1^{ii} 2.2734(3) ii: (1/2-*x*, 1/2-*y*, 1-*z*)	Au1-C9 2.000(2) Au1-C10 1.998(2)	Ru1-O1 2.0270(15) Ru1-O2^{ii} 2.0253(15) Ru1-O3 2.0252(15) Ru1-O4^{ii} 2.0219(15)	Ru1-N1 2.2728(18)	Ru1^{ii}-Ru1-N1 175.35(5)
4	Ru1-Ru1^{i} 2.2689(5) Ru2-Ru2^{ii} 2.2673(4) i: (1-*x*, -*y*, 1-*z*) ii: (2-*x*, 2-*y*, -*z*)	Au1-C21 1.995(3) Au1-C22 1.997(3) Au1-C23 1.992(3) Au1-C24 2.005(3)	Ru1-O1 2.0132(10) Ru1-O2^{i} 2.021(2) Ru1-O3 2.0192(10) Ru1-O4^{i} 2.0261(19)	Ru1-N1 2.278(2) Ru2-N3 2.283(3)	Ru1^{i}-Ru1-N1 173.71(6) Ru2^{ii}-Ru2-N3 172.75(7)