Synthesis, Structures and Magnetic Properties of tetranuclear Cu^{II}-Ln^{III} complexes.

Jean-Pierre Costes,*,[†] Magali Auchel,[†] Françoise Dahan,[†] Viviane Peyrou,[†] Sergiu Shova,[‡] Wolfgang Wernsdorfer[&]

[†]*Laboratoire de Chimie de Coordination du CNRS, UPR 8241, liée par conventions à l'Université Paul Sabatier et à l'Institut National Polytechnique de Toulouse,*

205 route de Narbonne, 31077 Toulouse Cedex (France).

Fax : 33 (0)5 61 55 30 03

email : costes@lcc-toulouse.fr

[‡] *Department of Chemistry Moldova State University,A.Mateevici str. 60. 2009 Chisinau, Moldova*

[&]*Laboratoire Louis Néel du CNRS, BP 166, 38042 GRENOBLE Cedex 9, France*

Supplementary Material

Supporting Information

Figure S1. Hydrogen bonds in the asymmetric unit of **5**.

Figure S2. Hydrogen bonds in **1**.

Figure S3. Thermal dependence of $\chi_M T$ for **10** at 0.1 T. The full line corresponds to the best data fit.

Figure S4. Thermal dependence of $\chi_M T$ for **11** at 0.1 T. The full line corresponds to the best data fit.

Figure S5. Thermal dependence of $\chi_M T$ for **14** at 0.1 T. The full line corresponds to the best data fit.

Figure S6. Thermal dependence of $\chi_M T$ for **15** at 0.1 T. The full line corresponds to the best data fit.

Figure S7. Thermal dependence of $\chi_M T$ for **16** at 0.1 T. The full line corresponds to the best data fit.

Figure S8. Frequency dependence of the out-of-phase susceptibilities against temperature in a 3 G AC magnetic field oscillating at different frequencies (from 50 to 1000 Hz) for complex **12**.

Figure S9. Hysteresis loop measurements of compound **12** (top) and **13** (bottom) for 0.04 K and several field sweep rates. The magnetization is normalized by the saturation value M_s at 1.4 T.

Figure S10. Magnetization decay measurements at several temperatures and at $H = 0$.

Figure S11. Arrhenius plot of ln τ against $1/T$ for compound **12** obtained from dc decay measurements (Figure S2). The dotted line is a least-squares fit to the Arrhenius law (see text).

Figure S12. The coercive field H_c for compound **12** as a function of field sweep rates and at several temperatures.

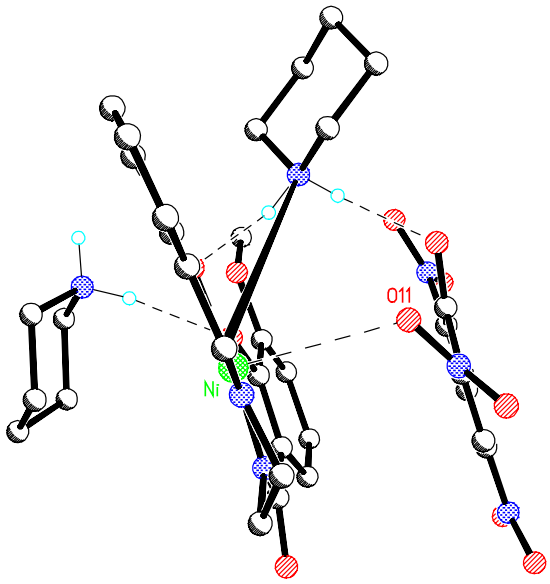

Figure S1.

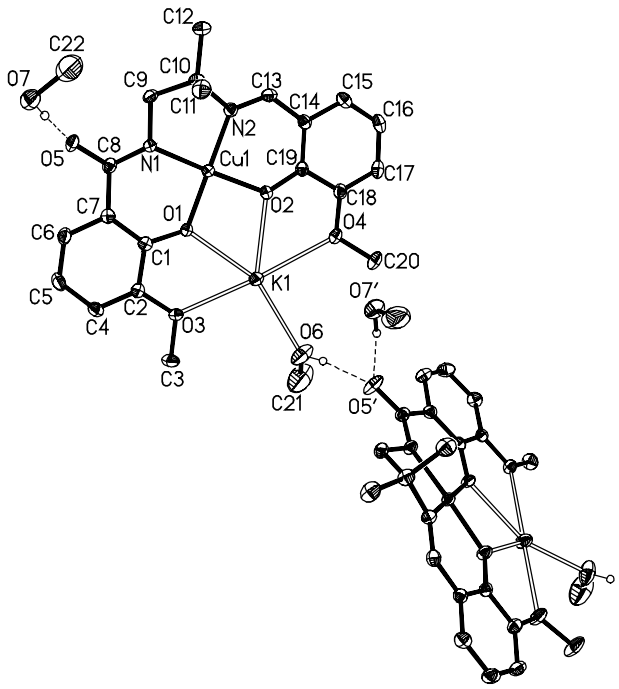
C12
C22
O7
C10
C9
C13
C15
C11
C14
C16
N2
O5
C8
N1
Cu1
C19
C17
C18
C7
O1
O2
O4
C6
C1
C20
K1
O7′
C5
C2
C4
O3
O6
C3
C21
O5′

Figure S2.

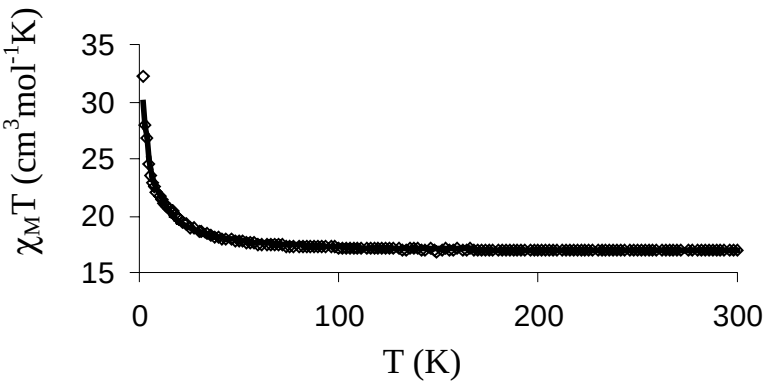

Figure S3.

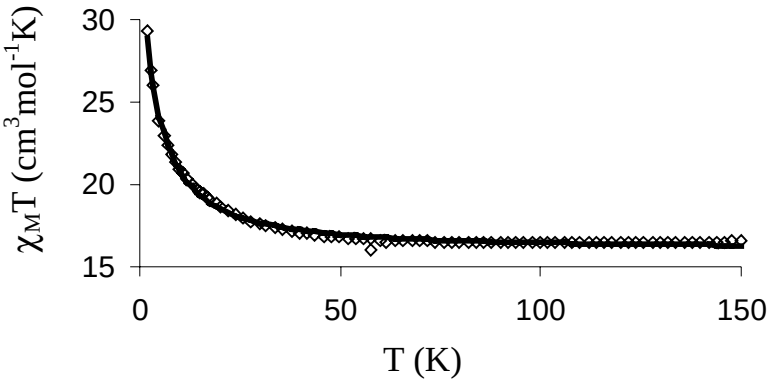

Figure S4.

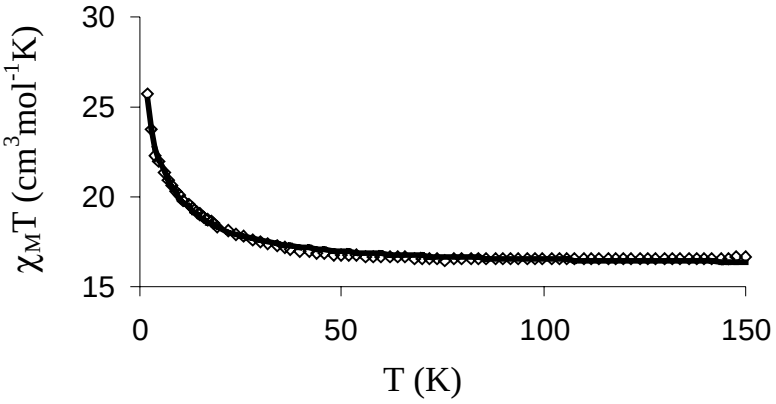

Figure S5.

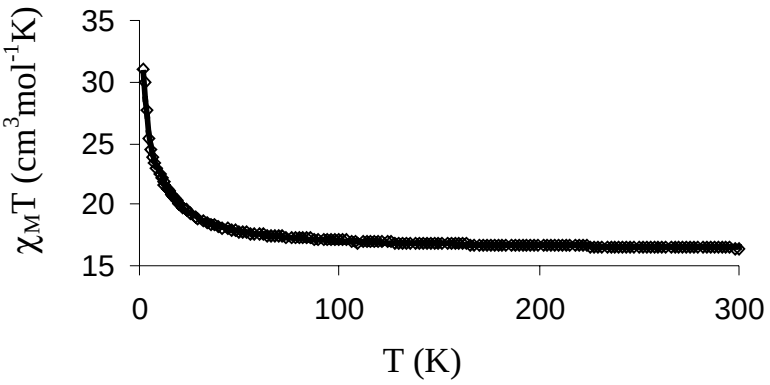

Figure S6.

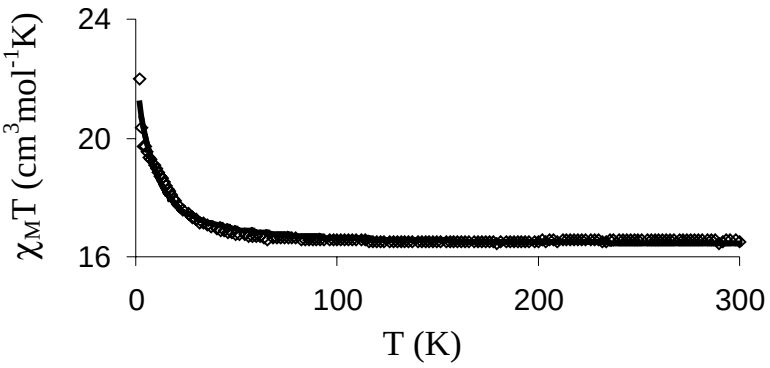

Figure S7.

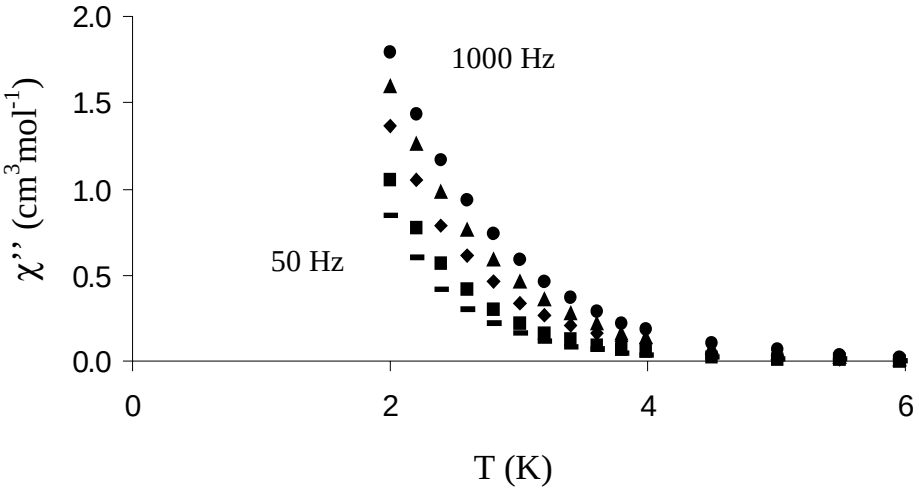

Figure S8. Frequency dependence of the out-of-phase susceptibilities against temperature in a 3 G AC magnetic field oscillating at different frequencies (from 50 to 1000 Hz) for complex **12**.

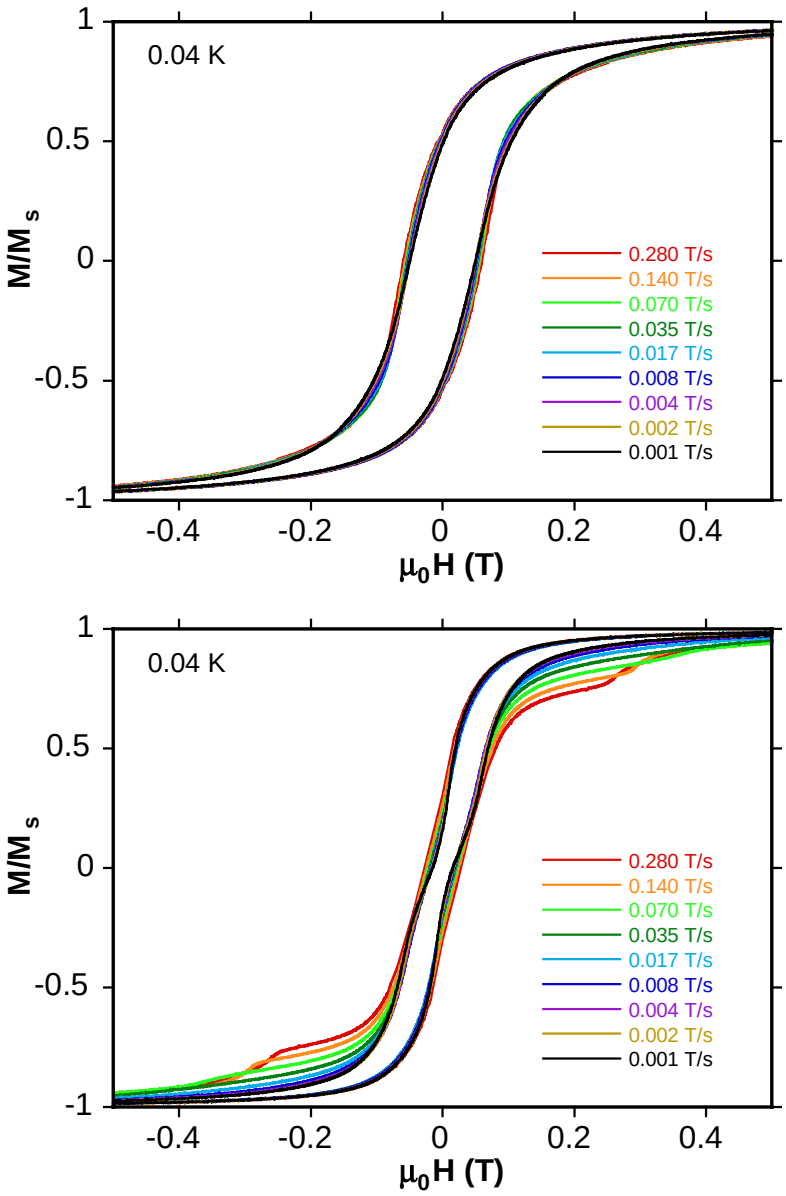
0.04 K
M/M s
μ0H (T)
0.280 T/s
0.140 T/s
0.070 T/s
0.035 T/s
0.017 T/s
0.008 T/s
0.004 T/s
0.002 T/s
0.001 T/s
0.04 K
M/M s
μ0H (T)
0.280 T/s
0.140 T/s
0.070 T/s
0.035 T/s
0.017 T/s
0.008 T/s
0.004 T/s
0.002 T/s
0.001 T/s

Figure S9

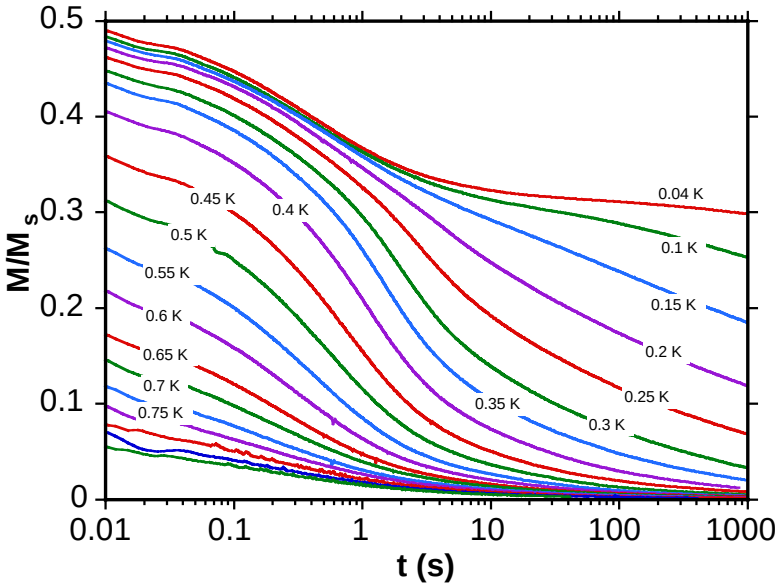

Figure S10.

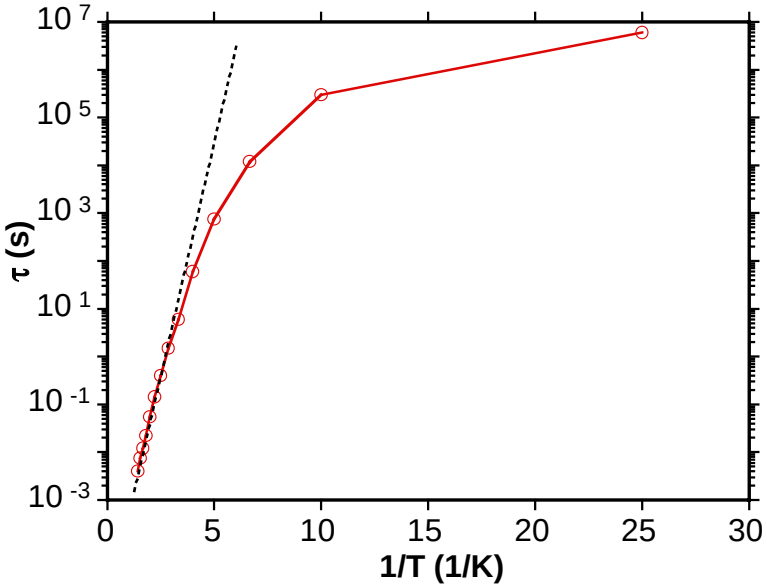

Figure S11.

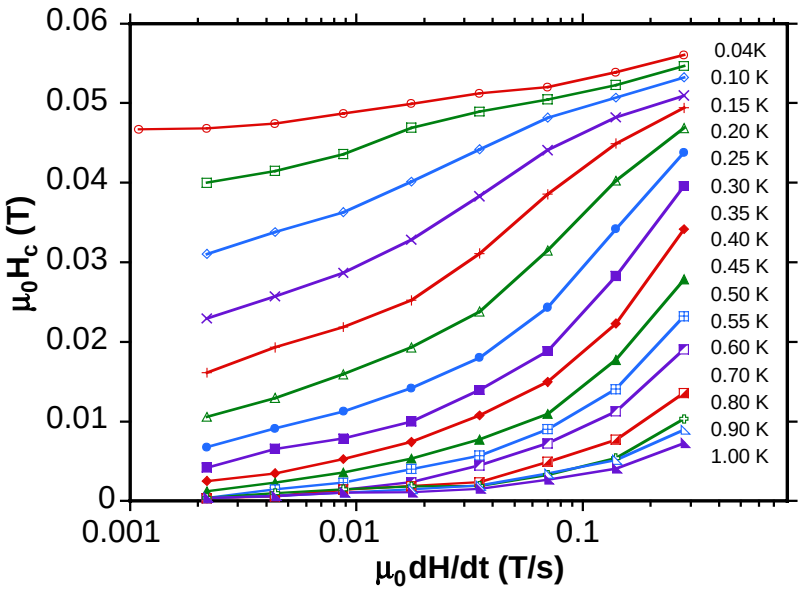
0.06
0.05
0.04
0.03
0.02
0.01
0
0.001
0.01
0.1
μ0Hc (T)
μ0dH/dt (T/s)
0.04K
0.10 K
0.15 K
0.20 K
0.25 K
0.30 K
0.35 K
0.40 K
0.45 K
0.50 K
0.55 K
0.60 K
0.70 K
0.80 K
0.90 K
1.00 K

Figure S12.