Electronic Supplementary Material (ESI) for Dalton Transactions.

SUPPORTING INFORMATION

Towards ionic liquids with tailored magnetic properties: bmim$^+$ salts of ferro- and antiferromagnetic Cu^{II}_3 triangles

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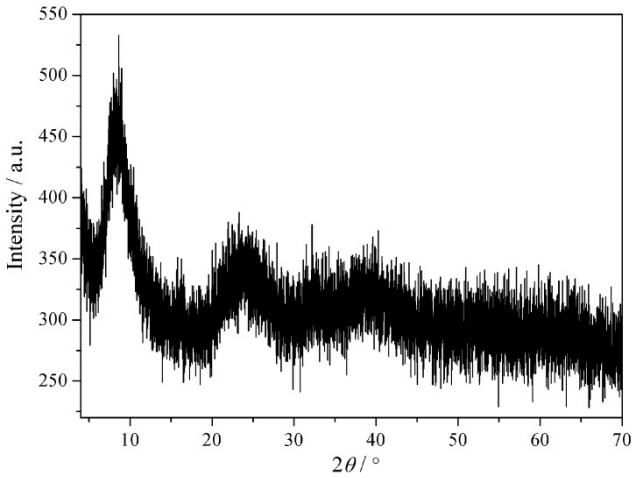

Figure S1. XRD pattern of complex **2** indicating an amorphous material.

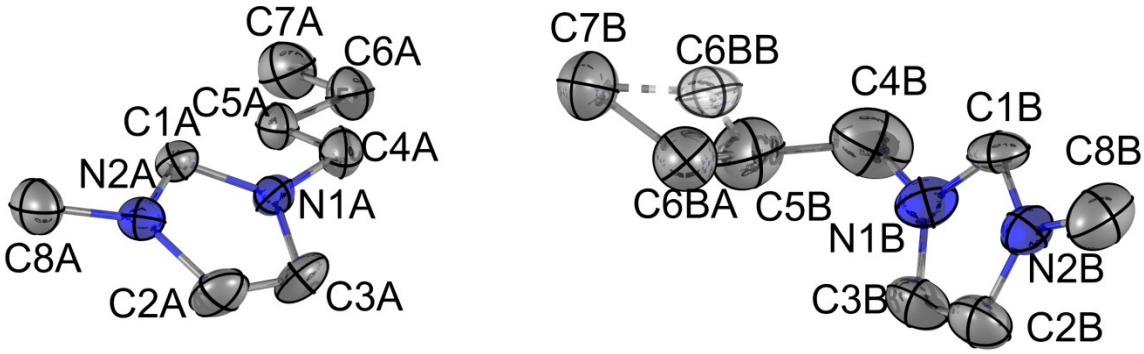

Figure S2. Thermal ellipsoid POV-Ray plot of the two cations of **1** (hydrogen atoms are omitted for clarity).

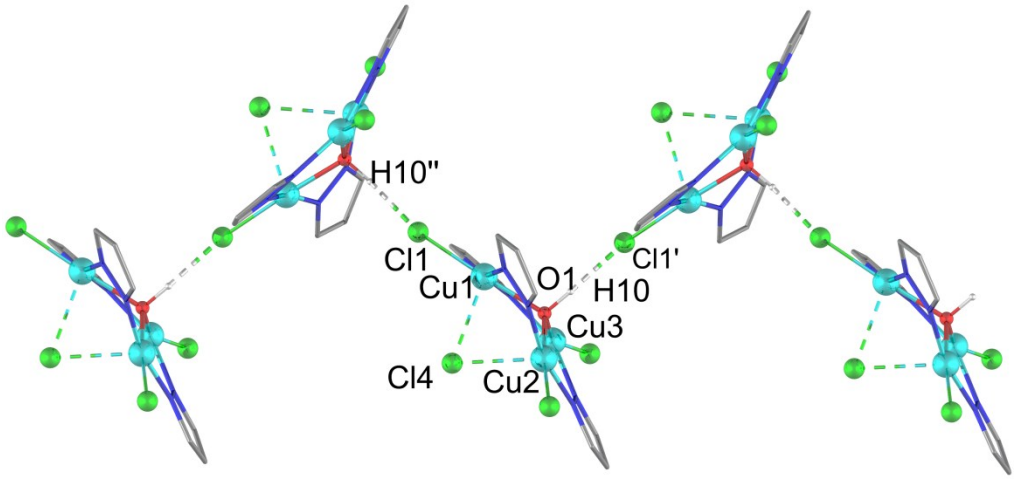

Figure S3. Diagram of the 1D zig-zag H-bonded chains formed by anions of **3**. Symmetry operation symbols: ' = 0.5 + *x*, 1.5 – *y*, –*z* ; '' = –0.5 + *x*, 1.5 – *y*, –*z*.

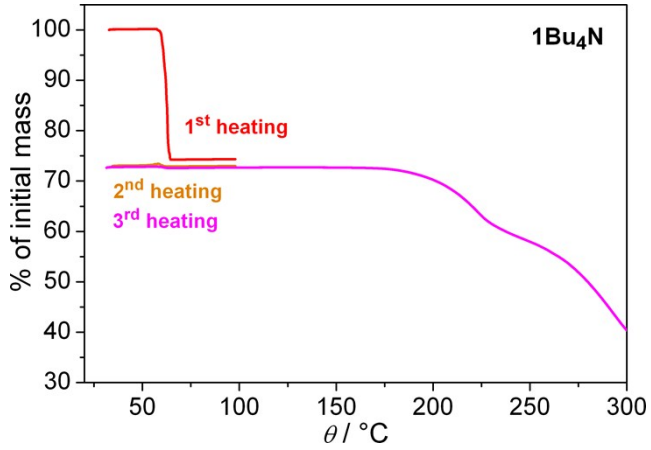

Figure S4. TGA traces of **1Bu$_4$N**. The studied sample of this complex was obtained co-crystallized with 2-3 CH_2Cl_2 solvate molecules, whose release gives rise to a step transition at 62°C, associated to weight losses between 17 and 26%. In subsequent heating runs, the dry complex only shows significant weight loss above 175°C, when decomposition sets on.

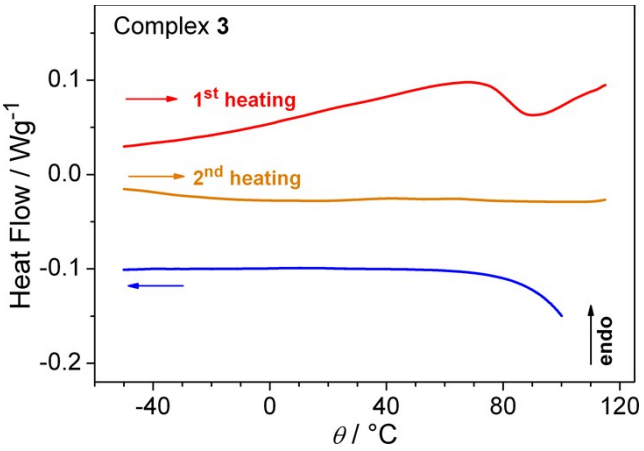

Figure S5. DSC traces of complex **3** showing only a broad and small exothermic event on first heating that presumably comes from a recrystallization process; the sample is steadily in a crystal state and decomposes before melting on further heating.

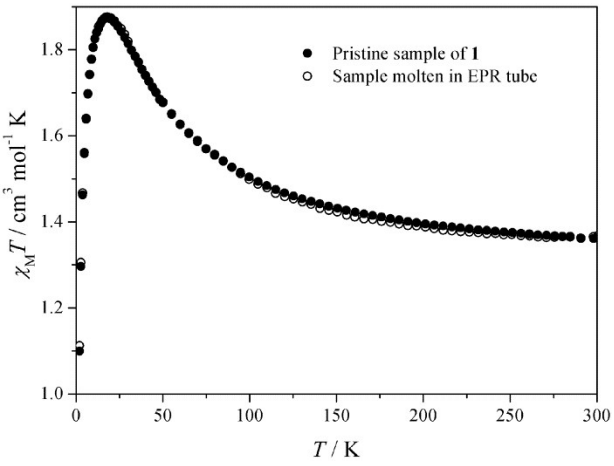

Figure S6. Superposition of the magnetic susceptibility data of pristine complex **1** and after melting in an EPR tube. Mass calculation and diamagnetic corrections on the latter sample were carried out based on the magnetic data of the pristine sample.

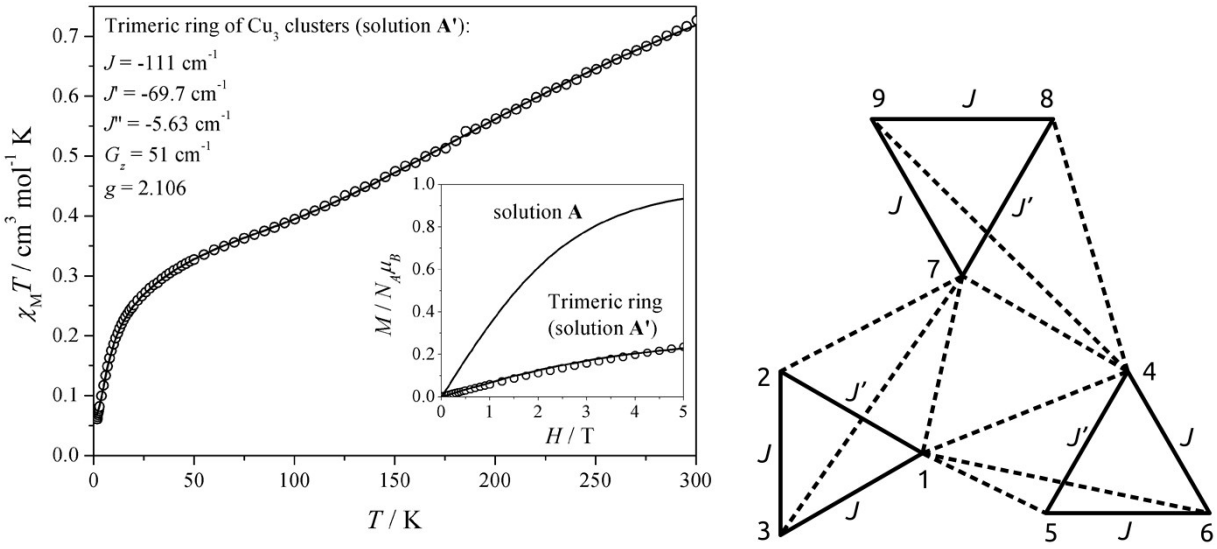

Figure S7. Magnetic susceptibility and 1.8 K isothermal magnetisation data (inset) of complex **3** and calculated curves assuming a trimeric ring of exchange-coupled Cu_3 complexes (right). Dashed lines correspond to the intermolecular *J''* interactions.

Figure S8. Quartz capillary loaded with the viscous complex **2** for EPR studies.