Self-enhancement of rotating magnetocaloric effect in anisotropic 2-D cyanido-bridged Mn^{II}-Nb^{IV} molecular ferrimagnet

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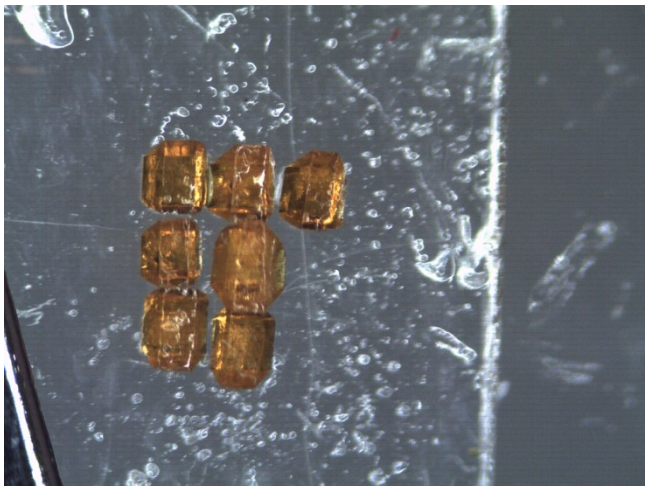

Figure S1. Photograph of the single crystals lying on a plastic plate coved by a thin layer of Apiezon grease. All crystals are in the same orientation.

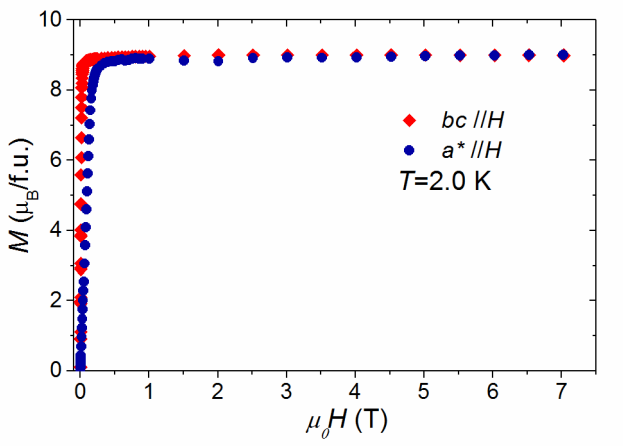

Figure S2. Isothermal magnetization of **1** at 2.0 K. Red diamonds - *bc*//*H*, blue circles - *a**//*H* geometry.

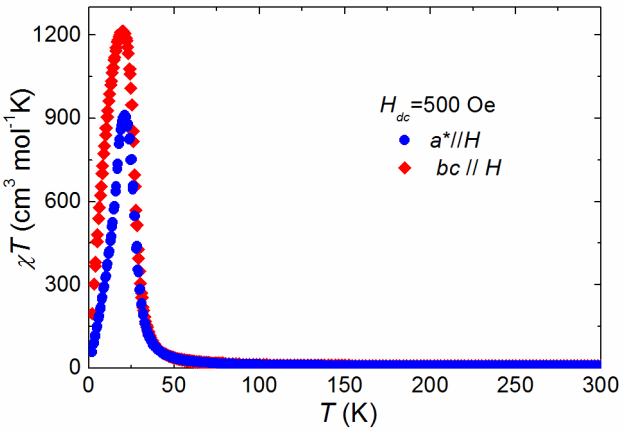

Figure S3. Temperature dependence of χT product for 1 in *bc*//*H* (red diamonds) and *a**//*H* (blue circles) geometry at *H*=500 Oe.

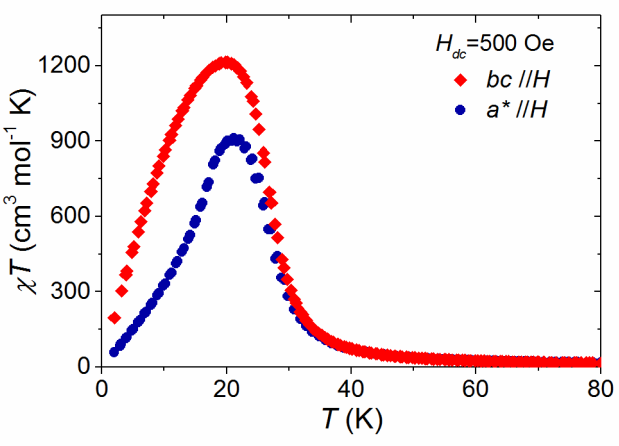

Figure S4. Plots of χT versus T for **1** as measured in the easy plane (red diamond) and in the hard axis (blue circles) direction at H=500Oe.

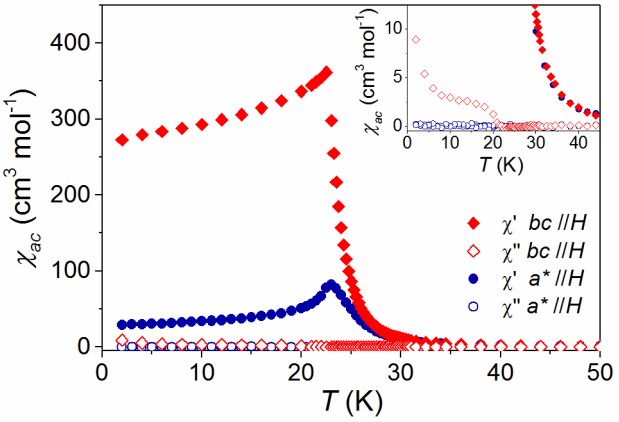

Figure S5. The ac susceptibility as a function of temperature for crystals oriented in *bc* // *H* (red diamonds) and *a** // *H* (blue circles) geometry measured at frequency of *F*=120 Hz and amplitude H_{ac}=3.0 Oe. Insert: The same data for small values of χ_{ac} to emphasize the contribution of out-of-phase component.

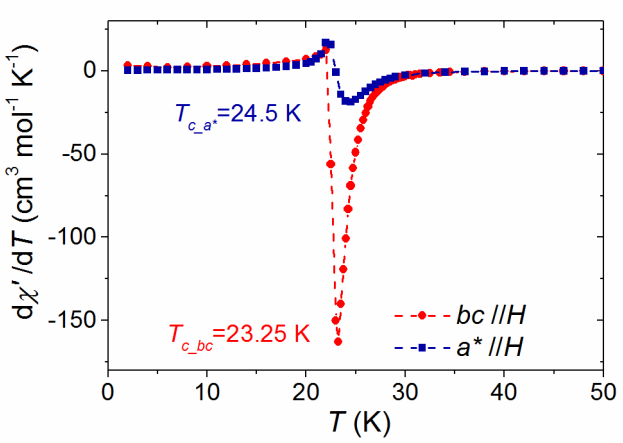

Figure S6. The first derivative of ac susceptibility real part as a function of temperature for *bc*//*H* (red circles) and *a**//*H* (blue squares) geometry. Temperatures of phase transition to ordered magnetic phase are pointed in the figure. Dashed lines are guides for the eyes.

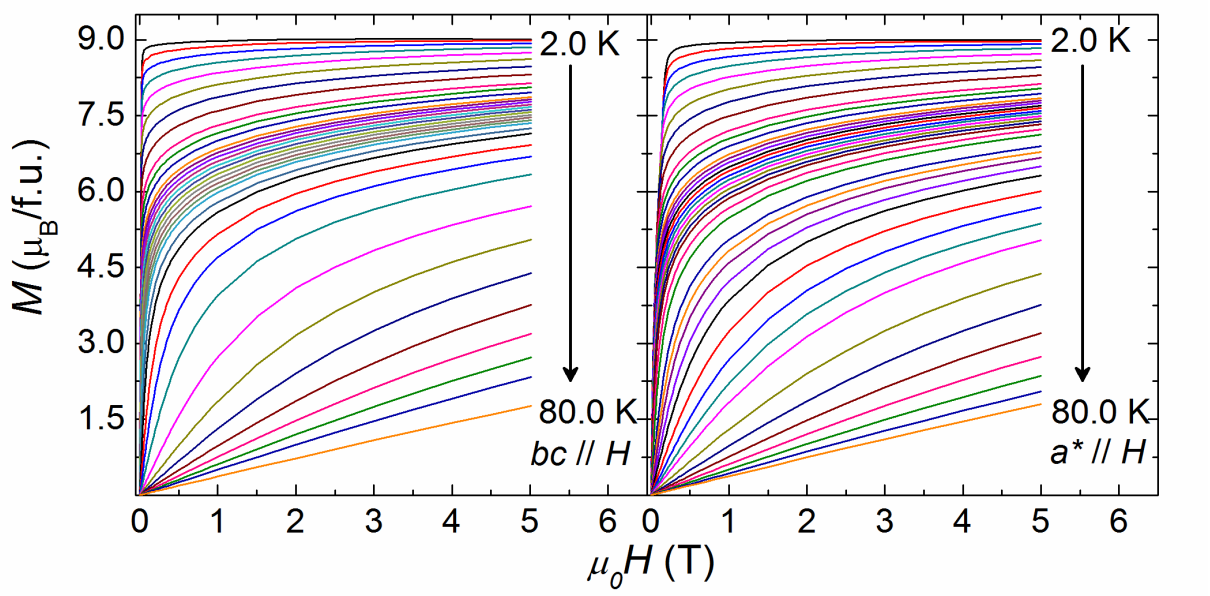

Figure S7. Isothermal magnetization of **1** for *bc*//*H* (left) and *a**//*H* (right) geometry collected for temperatures varying from 2.0 K to 80.0 K and fields ranging from 0 to 5.0 T.

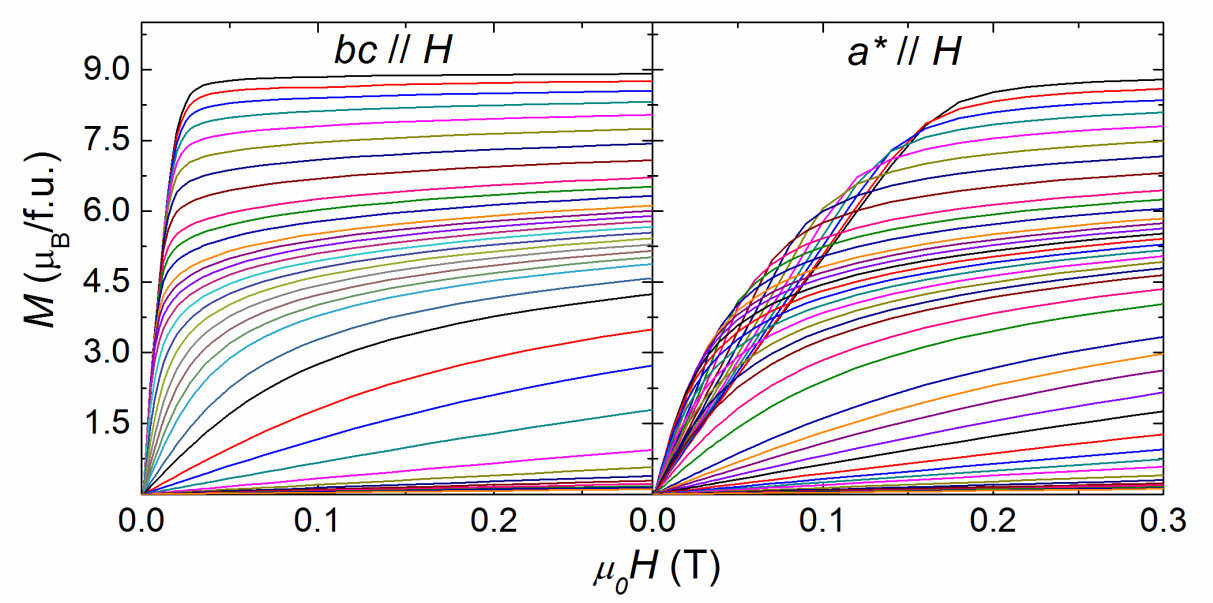

Figure S8. Isothermal magnetization of **1** for *bc*//*H* (left) and *a**//*H* (right) geometry collected for the same temperatures as in Figure S6 and field range 0 - 0.3 T.

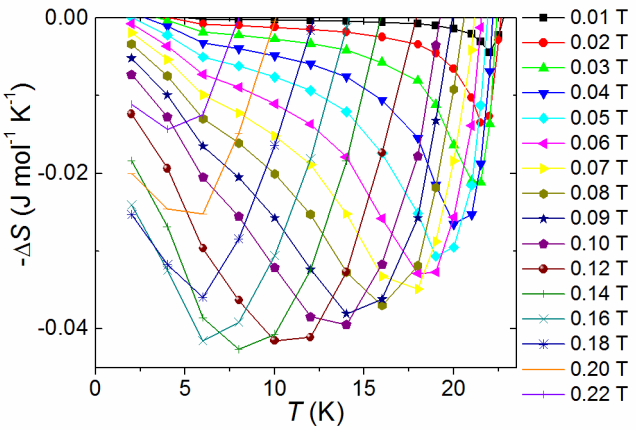

Figure S9. Temperature dependence of Inverse MCE for **1** in *a**//*H* geometry. Solid lines are guides for the eyes.

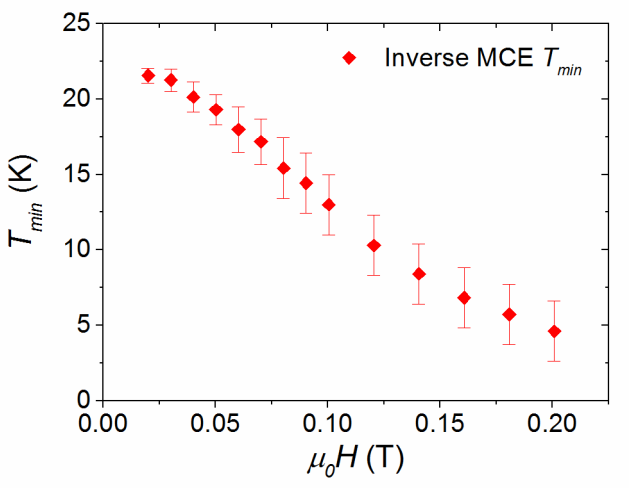

Figure S10. Field dependence of T_{min}, which is the temperature where the inverse part MCE posses a minimum. The data represents only the $a^*//H$ geometry, because there was no inverse MCE for the second geometry.

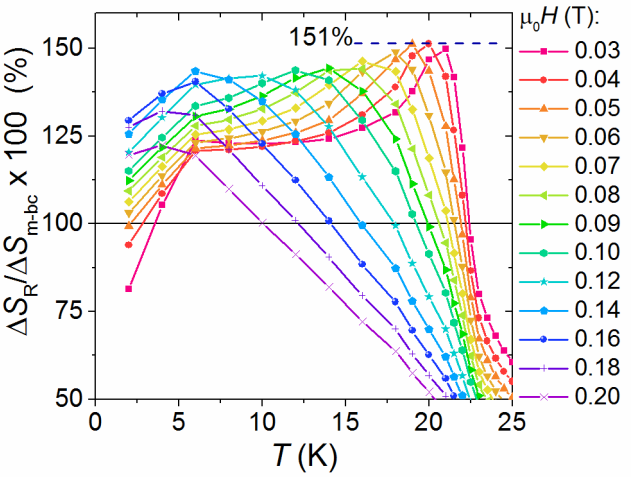

Figure S11. Ratio of ΔS_R and $\Delta S_{m\text{-}bc}$ as a function of temperature for different magnetic fields. Values above 100% indicate the excess of RMCE over the MCE in $bc//H$ geometry.