Supporting Information

Cryogenic Magnetocaloric Effect in Zircon Type RVO$_4$ (R = Gd, Ho, Er, and Yb)

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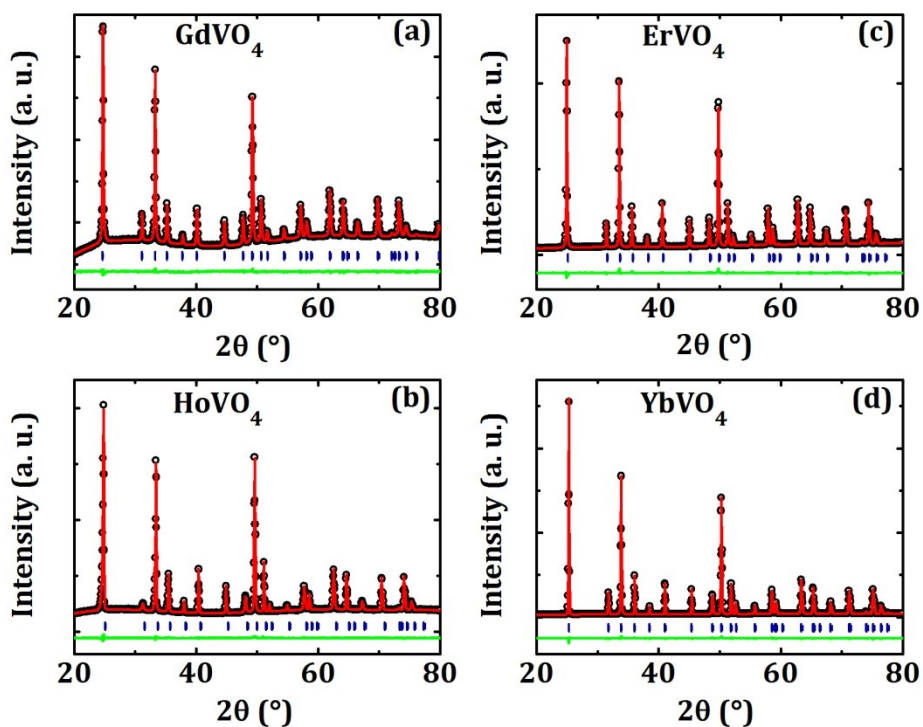
Supplementary Figures:

Fig. S1 X-ray diffraction patterns of (a) GdVO$_4$, (b) HoVO$_4$, (c) ErVO$_4$ and (d) YbVO$_4$ (symbols) at room temperature. The red curve shows the Rietveld fit and the plots at the bottom are the residual. The bars show the peak positions (the larger symbols are for Cu Kα_1 and the smaller ones for Cu Kα_2).
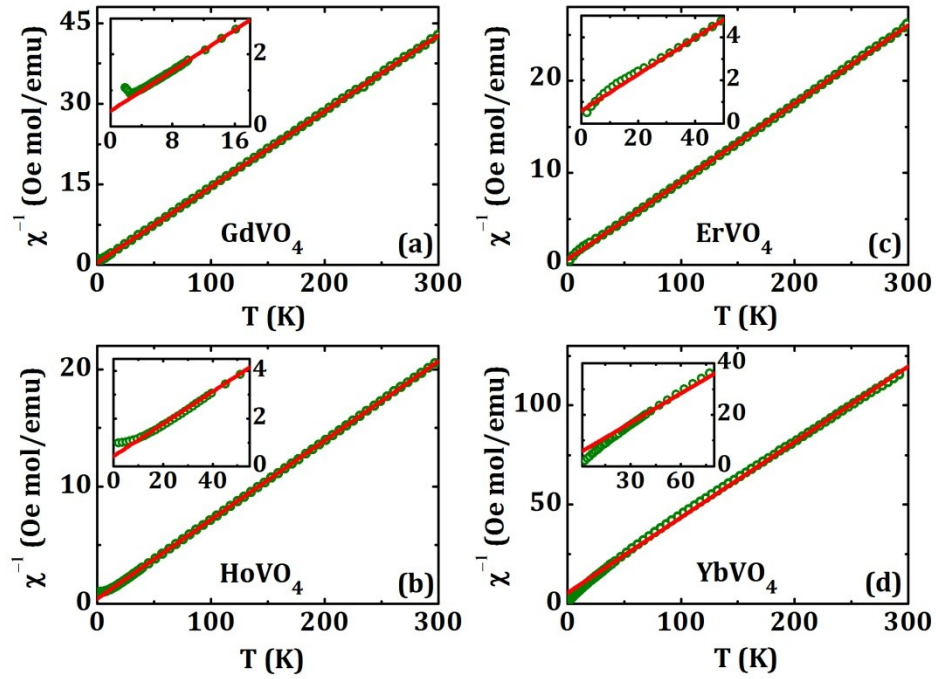
Fig. S2 The inverse susceptibility $\chi^{-1}(T)$ and the corresponding Curie-Weiss fit for (a) GdVO$_4$, (b) HoVO$_4$, (c) ErVO$_4$ and (d) YbVO$_4$. Inset of (a)-(d) highlights the low temperature part of $\chi^{-1}(T)$ and corresponding fit.
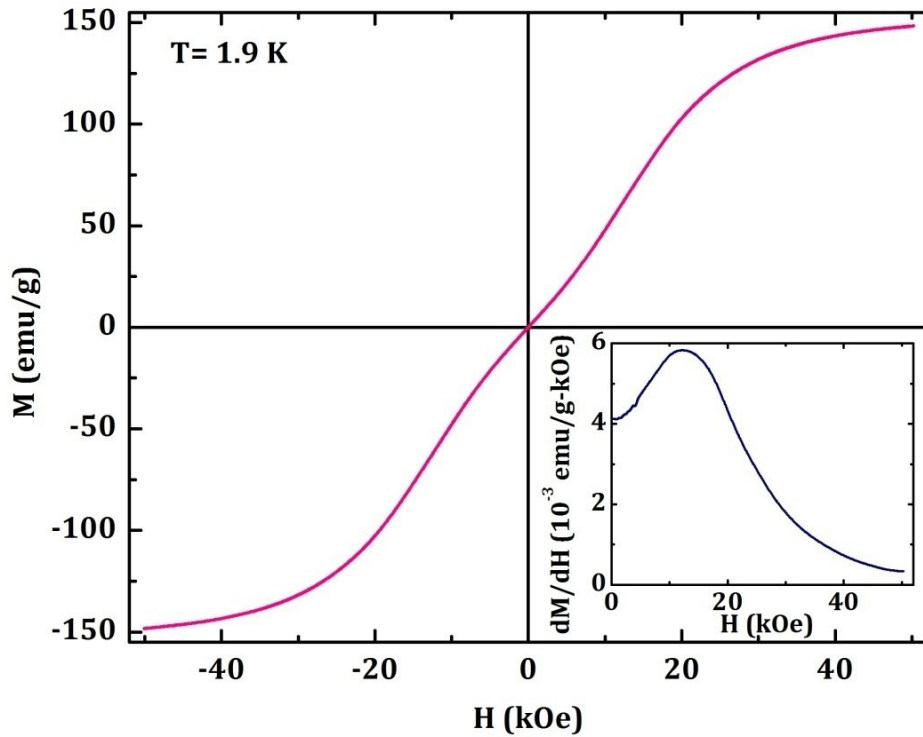

Fig. S3 M(H) curve of GdVO$_4$ at 1.9 K. Inset shows the dM/dH vs H plot.
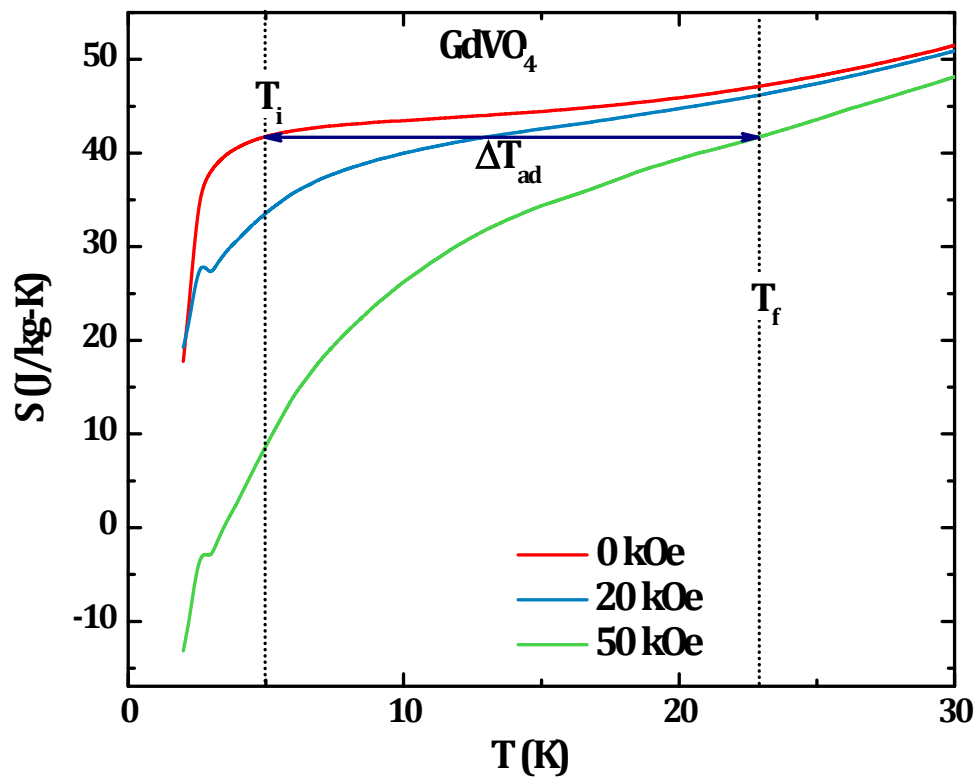
Fig. S4 Thermal variation of magnetic entropy (S) of $GdVO_4$ at 0, 20, and 50 kOe magnetic field calculated from the heat capacity data.