Supplementary material

Structure and unusual magnetic properties of the Mg-containing solid solutions based on Y_2FeTaO_7

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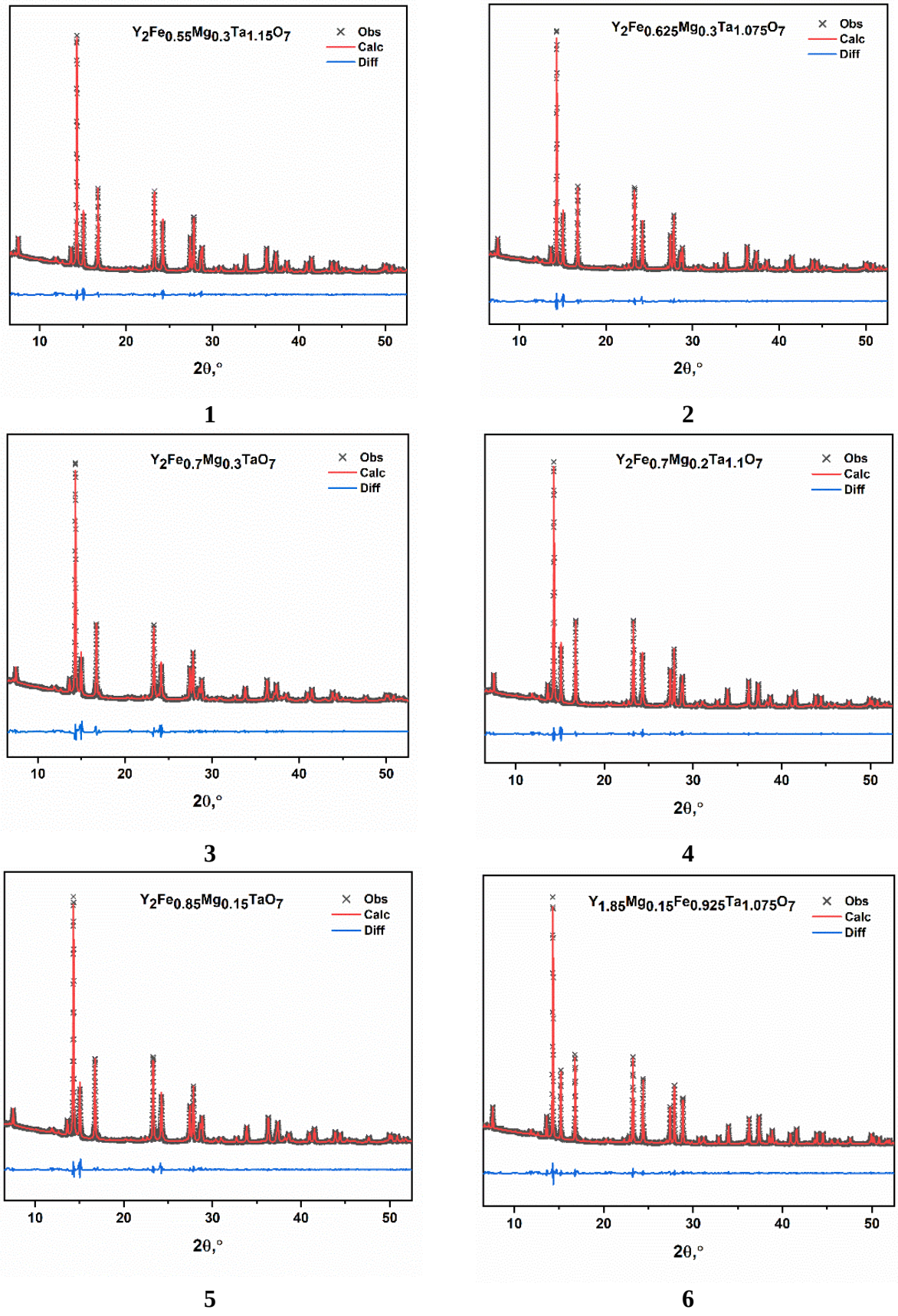

Fig. 1S. The results of Le Bail refinement for: *1* – $Y_2Fe_{0.55}Mg_{0.3}Ta_{1.15}O_7$, *2* – $Y_2Fe_{0.625}Mg_{0.3}Ta_{1.075}O_7$, *3* – $Y_2Fe_{0.7}Mg_{0.3}TaO_7$, *4* – $Y_2Fe_{0.7}Mg_{0.2}Ta_{1.1}O_7$, *5* – $Y_2Fe_{0.85}Mg_{0.15}TaO_7$, *6* – $Y_{1.85}Mg_{0.15}Fe_{0.925}Ta_{1.075}O_7$.

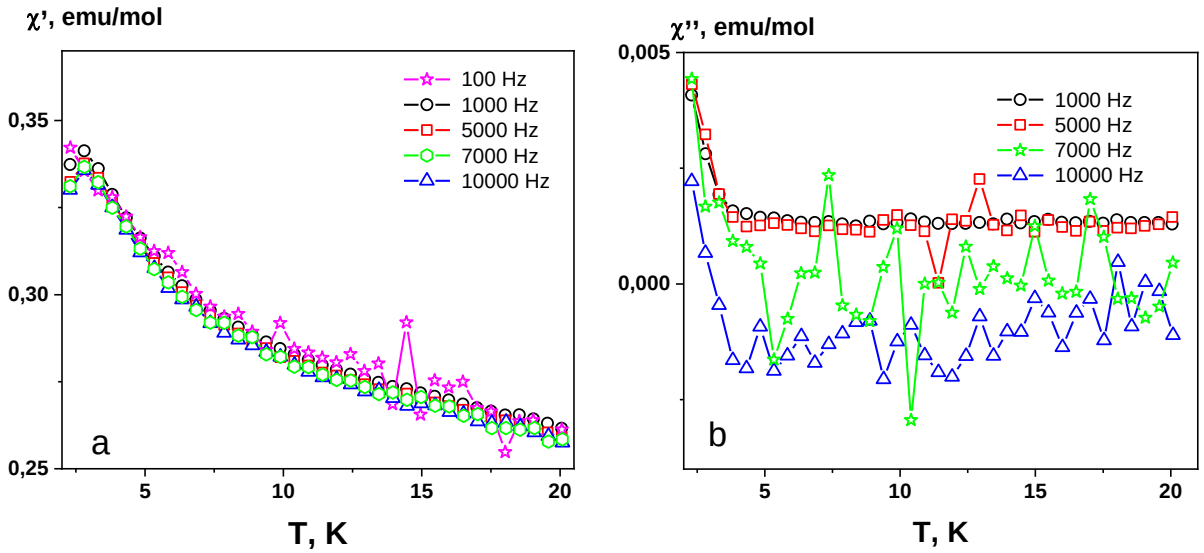

Fig. 2S. Real part χ'(a) and imaginary χ''(b) parts of *ac* susceptibility as a function of temperature, measured with different frequencies in the absence of external magnetic field for $Y_2Fe_{0.7}Mg_{0.2}Ta_{1.1}O_7$.

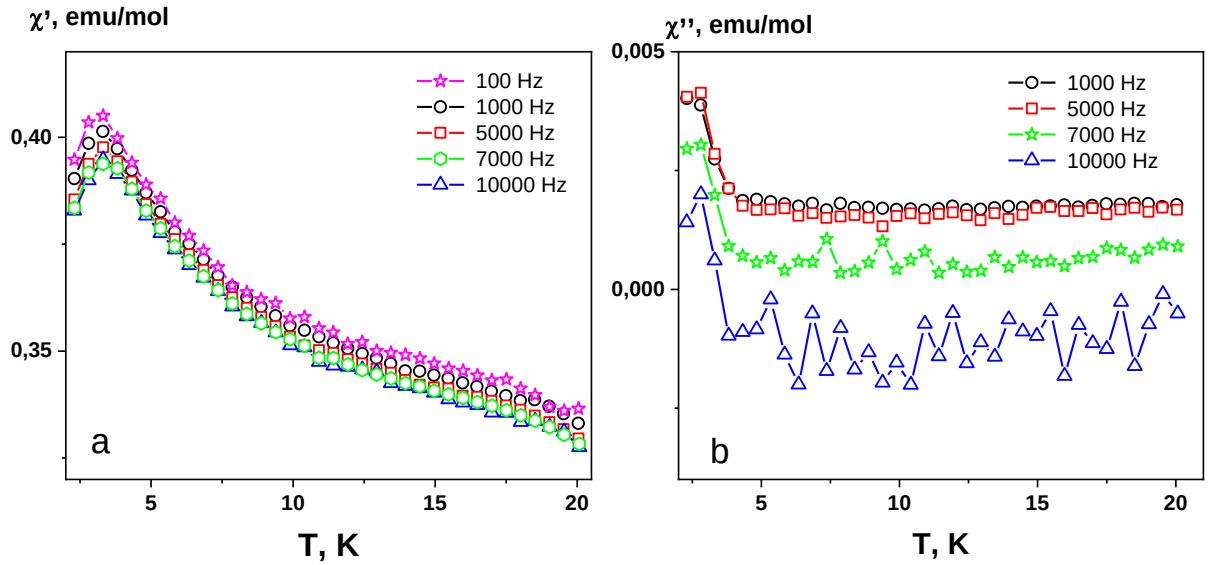

Fig. 3S. Real part χ'(a) and imaginary χ''(b) parts of *ac* susceptibility as a function of temperature, measured with different frequencies in the absence of external magnetic field for $Y_2Fe_{0.85}Mg_{0.15}TaO_7$.

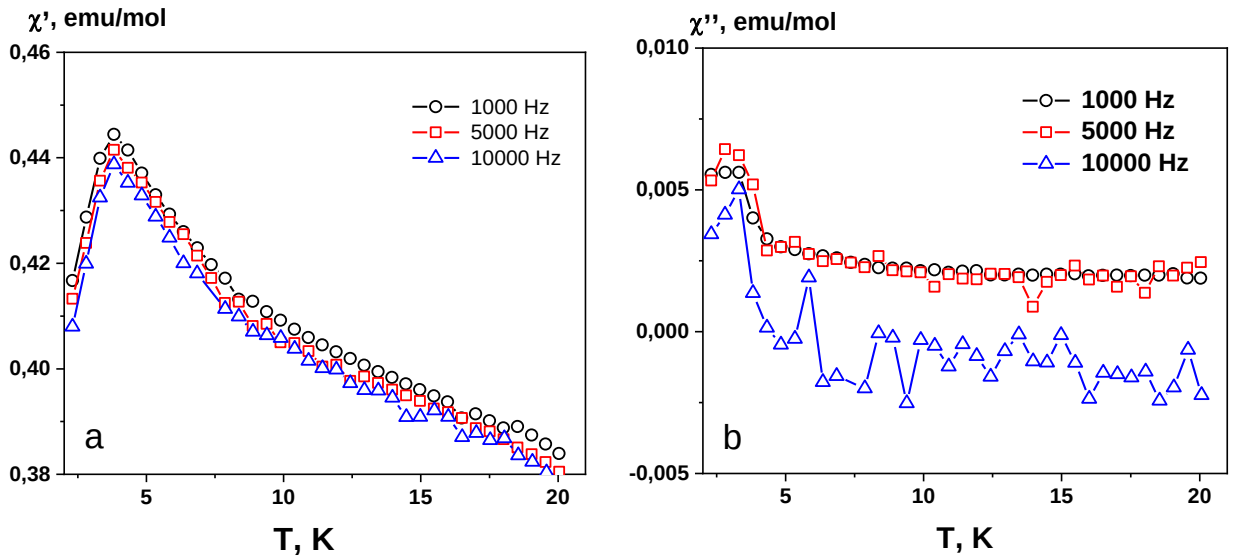

Fig.4S. Real part χ'(a) and imaginary χ''(b) parts of *ac* susceptibility as a function of temperature, measured with different frequencies in the absence of external magnetic field for $Y_{1.85}Mg_{0.15}Fe_{0.925}Ta_{1.075}O_7$.

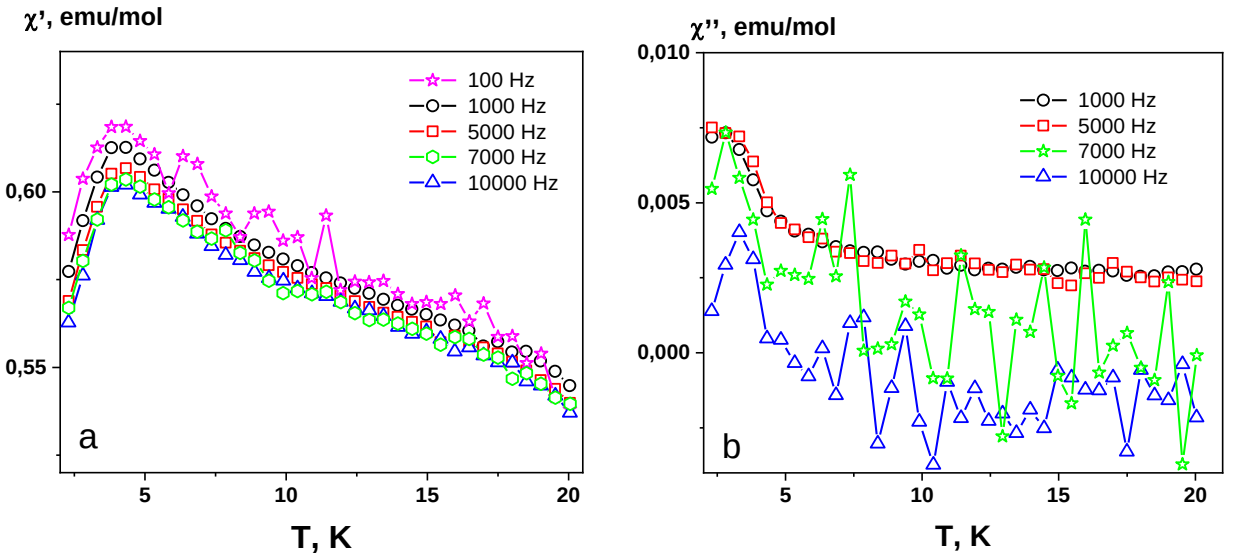

Fig. 5S. Real part χ'(a) and imaginary χ''(b) parts of *ac* susceptibility as a function of temperature, measured with different frequencies in the absence of external magnetic field for $Y_{1.85}Mg_{0.15}FeTaO_7$.