First Observed Metal-like to Insulator Transition in the Vacant 3*d* Orbital Quantum Spin Liquid $Tb_2Ti_2O_7$

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Supporting Information:

Figure 1 shows the variation of resistivity as a function of temperature (ρ vs T) for heating and cooling cycle. The absence of hysteresis in "metal-like to insulator transition" at 603 K is characteristics of the second-order transition.

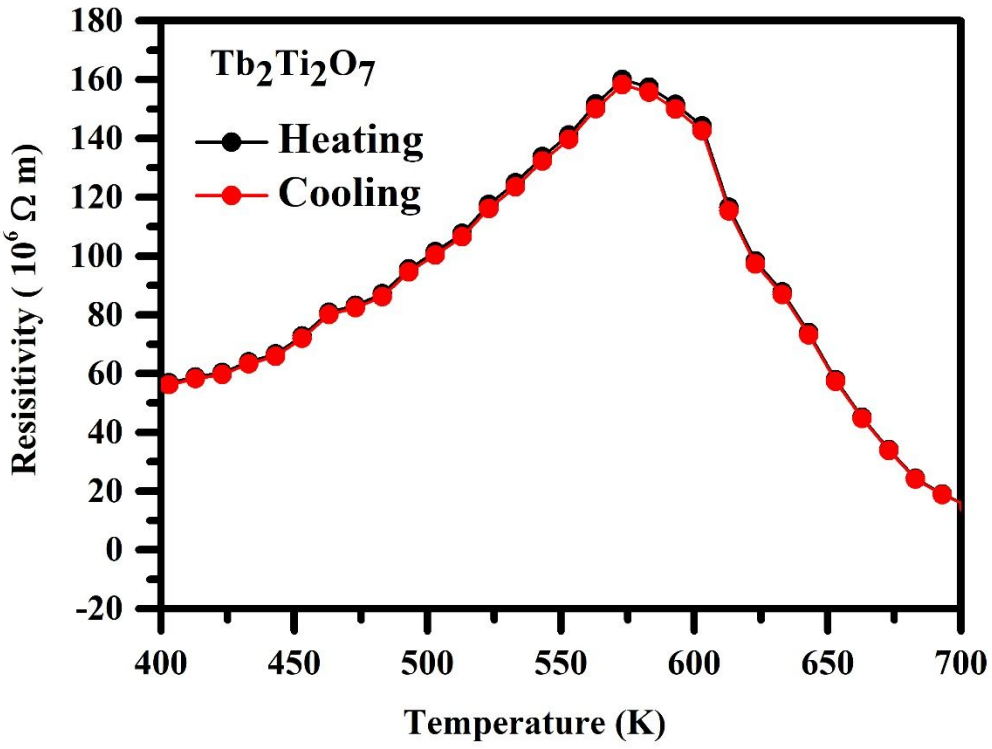

Figure 1: Resistivity as a function of temperature for the heating and cooling cycle of $Tb_2Ti_2O_7$.

Figure 2 shows the variation of electric modulus with temperature from 403 K to 803 K. Till 603 K the magnitude of M" peak decreases due to the metal-like behaviour and from 603 K the trend is reversed.

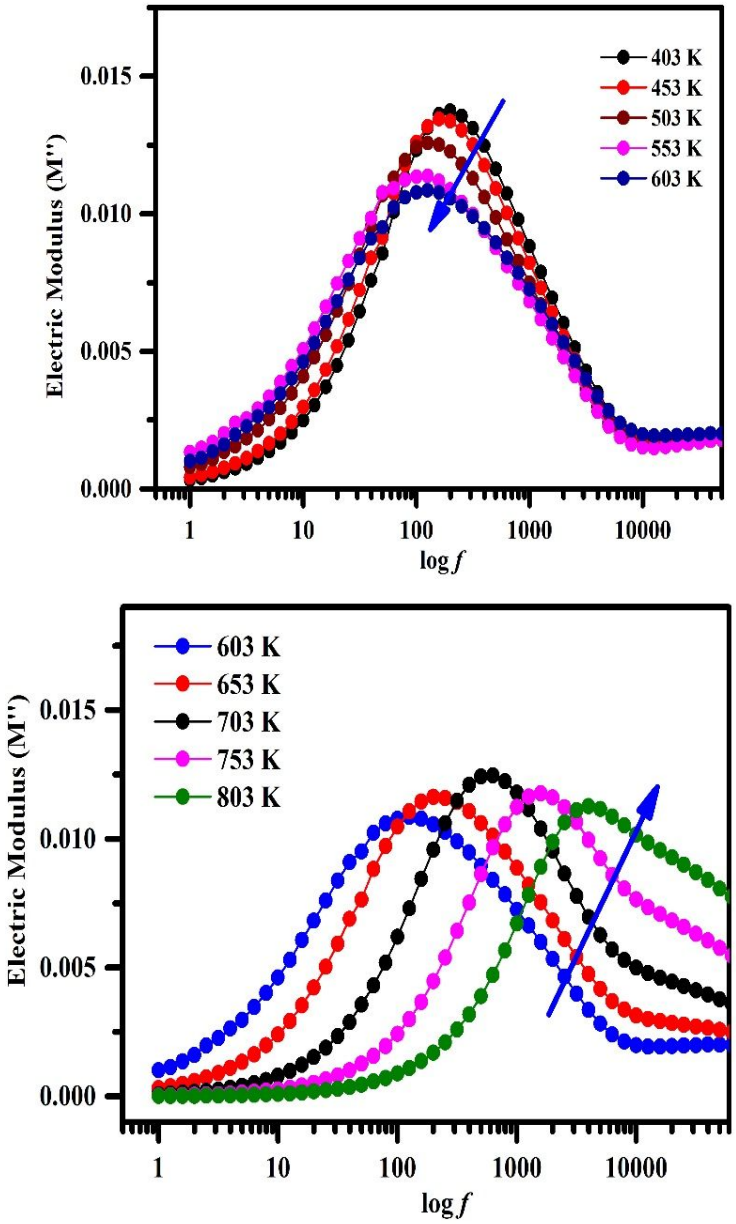

Figure 2: Electric modulus of $Tb_2Ti_2O_7$ from 403 K to 803 K. (top) the plot shows decrease in magnitude of M'' from 403 K to 603 K and beyond T_{MTI} (603 K) a clear shift in the peak is observed (bottom) from 603 to 803 K.