SPECIFIC HEAT OF $La_{1-x}Sr_xMnO_3$ COMPOUNDS

A. Szewczyk[a], K. Piotrowski[a], M.U. Gutowska[a], B. Dąbrowski[b], Z. Bukowski[b], M. Gutowski[a], D. Żymierska[a]

[a]Institute of Physics, Polish Academy of Sciences, Al. Lotników 32/46, Warsaw, Poland

[b] Northern Illinois University, DeKalb, USA

9.7 cm

Strong exchange interactions and spin-charge-lattice couplings lead to complex properties of $La_{1-x}Sr_xMnO_3$ for $x \approx 0.12$. On cooling, structural transition appears near 270 K, followed by coupled ferromagnetic-structural transition at 140 K. Using quasi-adiabatic method, the specific heat of dense polycrystalline samples with $x = 0.11$ and $x = 0.135$ was measured over the temperature range 4–280 K. Anomalies connected with structural and magnetic phase transitions were observed and analyzed. Because a poor thermal conductivity of the material, very long sample-calorimeter relaxation time was observed and the conventional method of determining heat capacity could not be used. Instead, a curve fitting method proposed in [?] was adapted and modified by applying the nearly equal ripple filters [?] to smooth the measured time dependences of temperature.

References

[1] Jih Shang Hwang, Kai Jan Lin, Cheng Tien *Rev. Sci. Instrum.* **68(1)** 94 (1997)

[2] J.F. Kaiser and W.A. Reed *Rev. Sci. Instrum.* **48(11)** 1447 (1977)

13.4 cm

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Corresponding author :
A. Szewczyk

Address for correspondence :
Institute of Physics, Polish Academy of Sciences, ON-3.5 Al. Lotników 32/46, Warsaw, Poland

Email address :
szewc@ifpan.edu.pl