ABSTRACT

Controlled size $La_{0.5}Ca_{0.5}MnO_3$ (which is a colossal magnetoresistive i.e. CMR compound) nanoparticles were synthesized using modified citrate route and the best working conditions for the reaction were found out. Structural characterization was done by XRD. From the XRD data, particle sizes were found out using Sherrer's formula. It was observed that the particle size increases with increase in the annealing temperature of the precursor. To study the effect of particle size on the magnetic properties, M(T) and M(H) characterization were performed. Maximum magnetization at 110 K was found to increase with increase in particle size. Coercivity was found to, first, increase and then decrease with particle size. The results were verified using another slightly different method in which one of the starting chemicals was different. The results obtained from both methods yielded to be in good accordance.