Supporting Information

Coexistence of High Magnetization and Anisotropy with Non-monotonic Particle Size Effect in Ferromagnetic $PrMnO_3$ Nanoparticles

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EDAX analysis of P1, P2 and P3

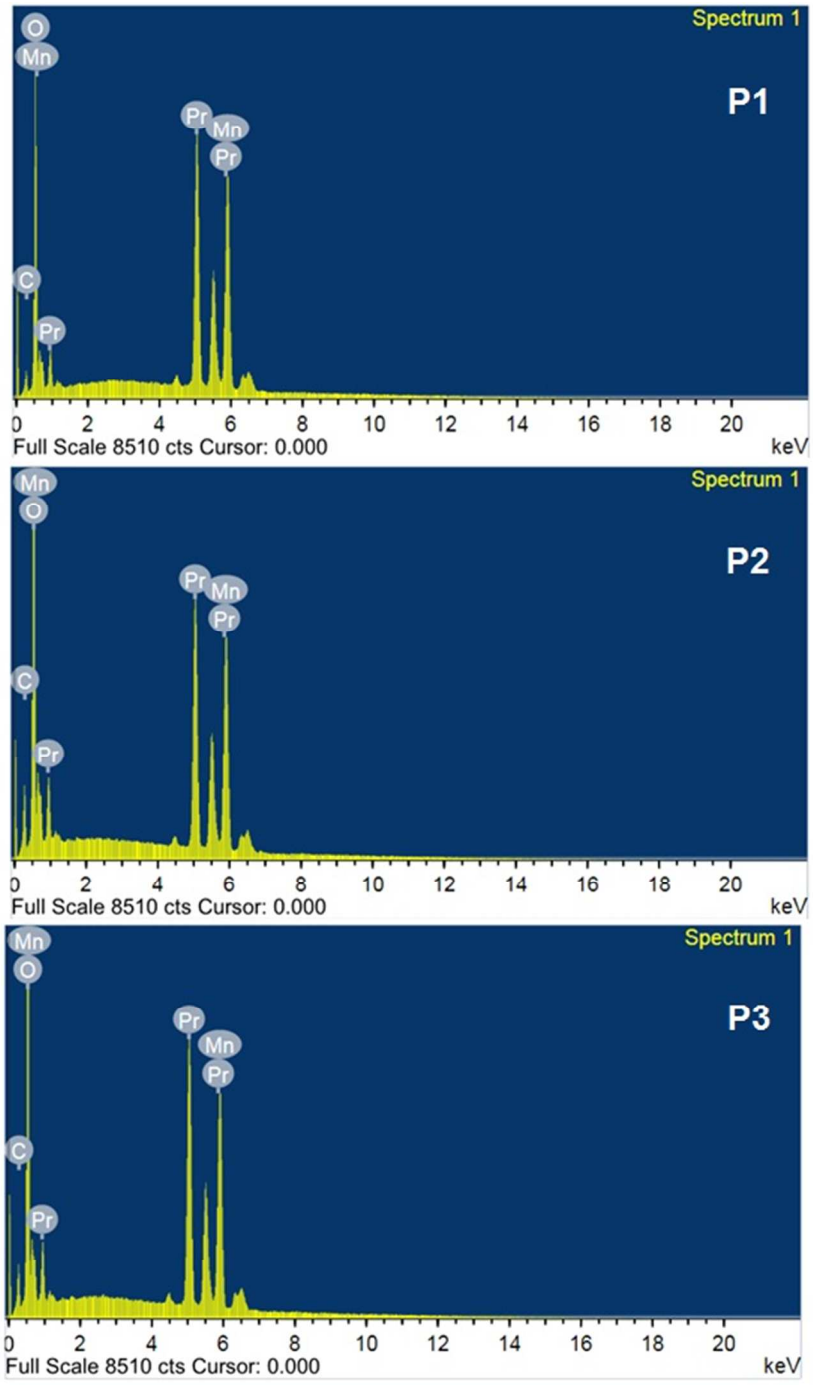

Figure S1: EDAX spectra of P1, P2 and P3.

Elemental Mapping

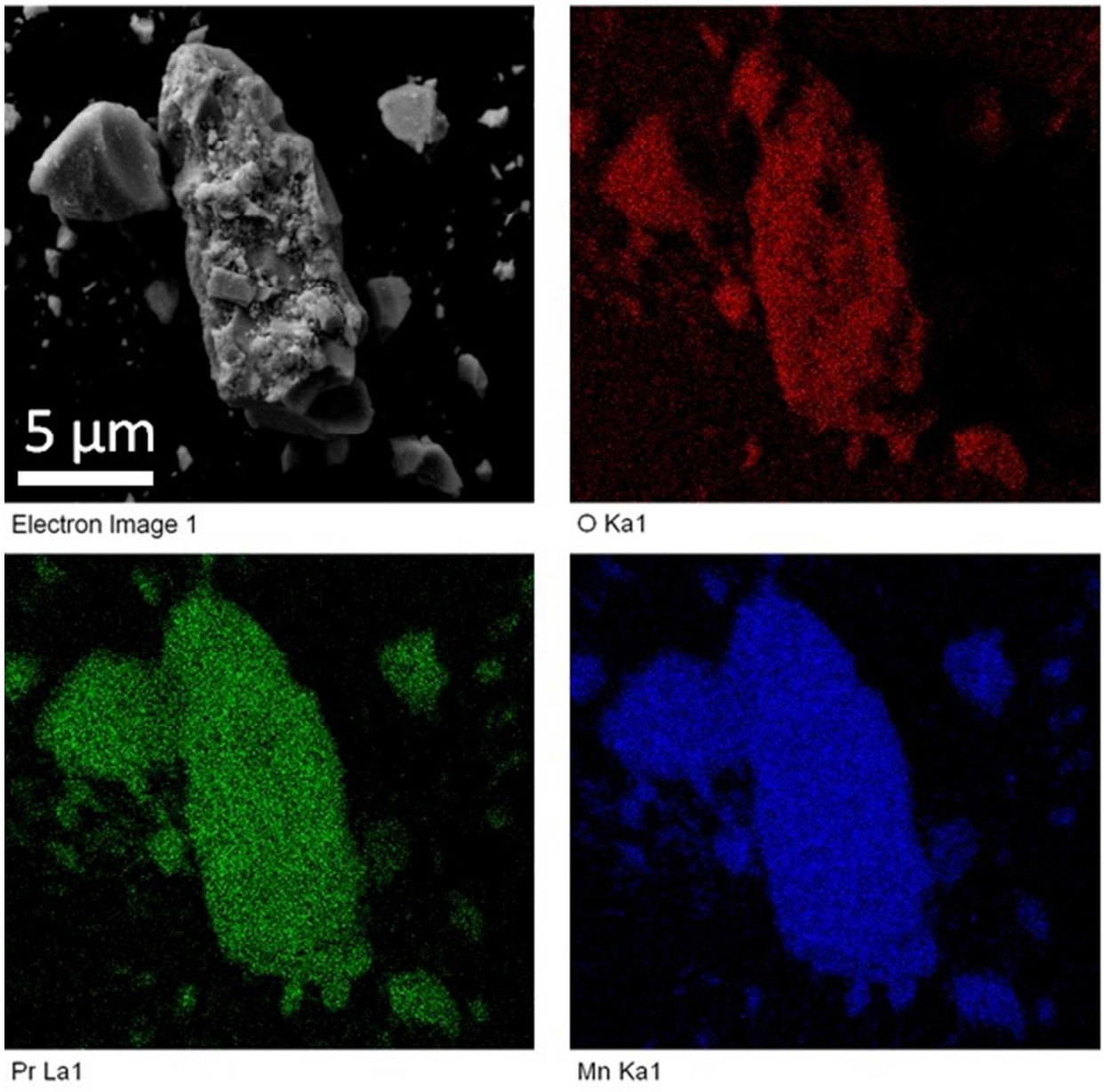

Figure S2: Elemental maps of P1 NPs.

Discussion S1: Gravimetric Analysis of Oxygen Nonstoichiometry

Oxygen Non-stoichiometry Calculation: Oxygen nonstoichiometry in the P1, P2 NPs and P3 particles has been calculated by their reaction at elevated temperatures under reducing atmosphere as follows:

$PrMnO_{3+\delta} + ½ (1 + 2\delta) H_2 = ½Pr_2O_3 + MnO + ½ (1 + 2\delta) H_2O$

The samples were first preheated at 600^oC for 30 min in air to remove moistures and surface bound -OH, -CO_3 groups. The initial weight of the 'cleaned' samples was measured (y_1 g). Thereafter the samples were introduced at the center of the quartz tube placed inside a tubular furnace. The samples were heat treated in H_2/He (2:98 v/v) at 900^oC for 30 min at the rate of 2^oC/min. After cooling, the weight of the products was measured (y_2 g). The non-stoichiometry was calculated as follows:

M [$PrMnO_{3+\delta}$] / M [$½Pr_2O_3$ + MnO] = y_1/y_2

where M is the molecular weight.

Evidence of Spin-glass from ZFC-FC Curves at High Applied Field

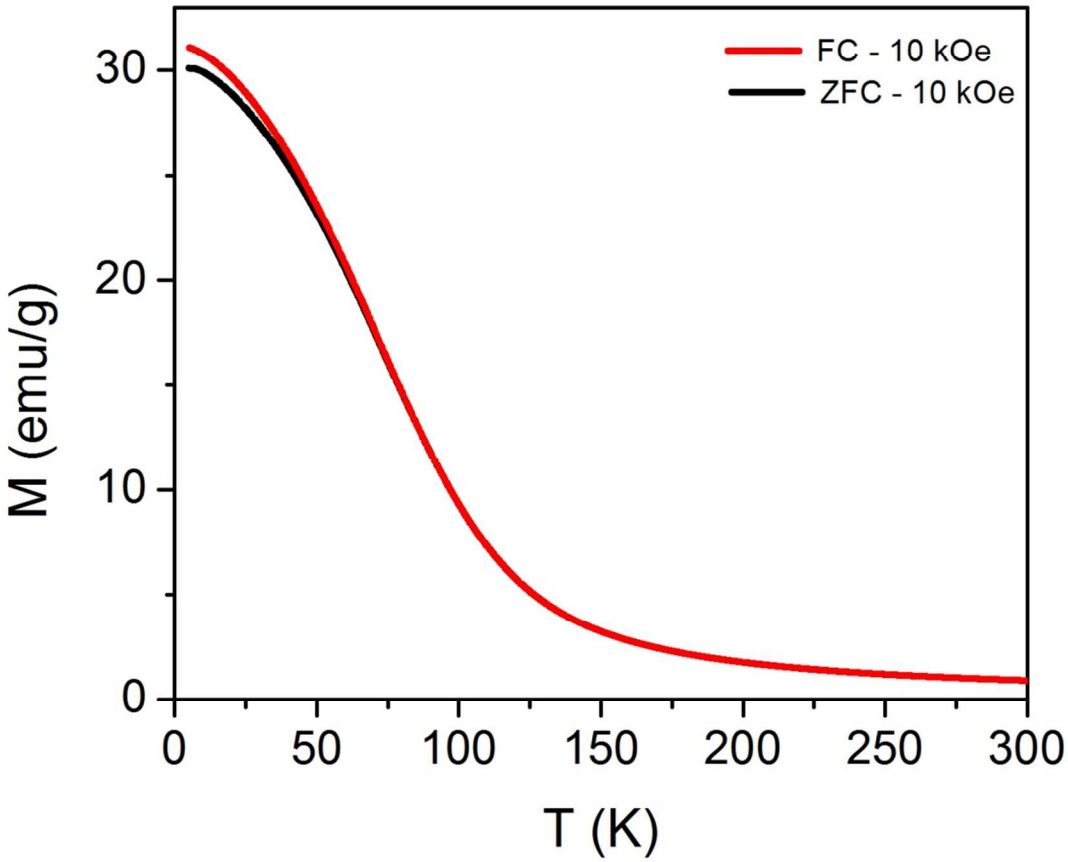

Figure S3: ZFC-FC curves of P1 NPs at 10 kOe applied field.