

## Reply to the comment “Nature of low-temperature . . . ”

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The essence of R. Przenioslo and I. Sosnowska's comment is in confirmation of their earlier statement that the phase transitions at 49 and 89 K in  $\text{CaMn}_7\text{O}_{12}$  are both of magnetic origin [1]. Careful reconsideration of previously published and newly obtained data on the physical properties of this compound lead us to agree that each of these transitions includes, at least, some modification in magnetic subsystem. New measurements of the thermal expansion on ceramic samples of  $\text{CaMn}_7\text{O}_{12}$  show similar anomalies as those reported in Ref. [2] at both phase transitions at 49 and 89 K, but the overall expansion remains positive in the intermediate temperature range. In addition, the results of a muon scattering experiment in  $\text{CaMn}_7\text{O}_{12}$  [3] and our recent investigation of the Moessbauer effect in  $\text{CaMn}_7\text{O}_{12}$  doped with  $^{57}\text{Fe}$  [4] present evidences for a coexistence of a paramag-

netic phase (not of impurity origin) with a magnetically ordered phase in the temperature range between 49 and 89 K. This newly found phase separation aspect in the low temperature behavior of  $\text{CaMn}_7\text{O}_{12}$  indicates that the physical properties of this compound and the nature of the low temperature phase transitions clearly deserve further investigation.

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1. R. Przenioslo, I. Sosnowska, E. Suard et al., *Physica B* **344**, 358 (2004).
  2. O. Volkova, Yu. Arango, N. Tristan et al., *Pis'ma v ZhETF* **82**, 498 (2005).
  3. A. Prodi, G. Allodi, E. Gilioli et al., *Physica B*, in press (2006).
  4. A. Sobolev, I. Presnyakov, E. Goodilin et al., to be reported elsewhere.