



	Experiment title: Study of phase transtion of NaNO ₂ embedded into nanoporous glass	Experiment number: HC-2743 -
Beamline: BM01A	Date of experiment: from: 03.10.2016 to: 05.10.2016	Date of report: 27.12.2016
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Report:

The results of X-ray diffraction study of the temperature evolution of crystal structure of NaNO₂ embedded into a nanosized porous glass with average pore diameter 20 nm and 46 nm are reported. The measurements have been performed in the temperature range 300-460 K with step ≈ 2 K.

The temperature dependences of NaNO₂ order parameter $\eta(T)$ (Fig. 1) have been obtained from Rietveld refinement. It can be seen that $\eta(T)$ of NaNO₂ in the porous glass with 46 nm pores at heating does not significantly differ from bulk dependency. Temperature dependencies $\eta(T)$ for NaNO₂ in 20 nm glass both at heating and cooling and for NaNO₂ in 46 nm glass at cooling are shifted down relative to the bulk dependency even at low temperatures where order parameter of bulk NaNO₂ reaches 1. This fact can be related with lack of the ferroelectric ordering at surface layer of NaNO₂ particles. Besides that shift of phase transition temperature can be noticed (Fig.1) at cooling for embedded NaNO₂ in both samples.

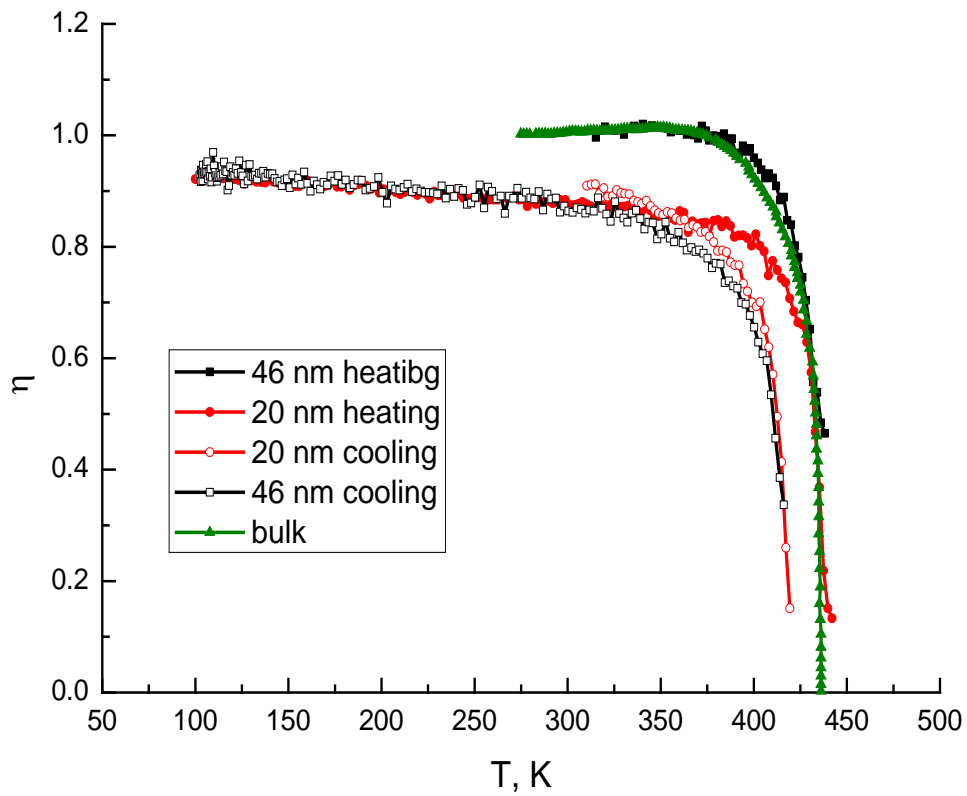


Fig. 1 Temperature dependencies of order parameters $\eta(T)$ for NaNO₂ embedded into the porous glass with average pore diameter 20 nm, 46 nm at heating and cooling and for bulk NaNO₂