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**Magnetic properties of novel magnetic porous glass-based multiferroic nanocomposites**

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**Abstract**

In this paper we report on the first experimental studies of the magnetic and electric properties of the ferroelectric materials incorporated in magnetic porous glasses with the controlled pore size. This new material exhibits very small electrical conductivity which allows us to examine the dielectric and magnetoelectric characteristics of these porous glasses concerning magnetite. The magnetic measurements of empty porous glasses and glasses with multiferroic nanocomposites demonstrate the Verwey transition in magnetite. Ferroelectric phase transitions were observed together with hysteresis loops as irrefutable proof of the ferroelectricity in multiferroic nanocomposites based on magnetic porous glasses. The observed exceptional electrical properties show large potential of this novel group of multiferroics for modern applications.

Key words: A: nanostructured materials, A: ferroelectrics, B: chemical synthesis,

C. magnetization, C. dielectric response

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