Study of the structure of phosphorus-containing mesoporous silicas by TEM

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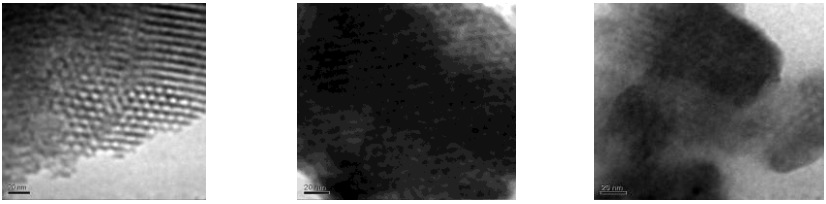
TEM method is needed to study the microstructure of various types of nanomaterials including sorbents, catalysts, films, etc. [1]. The aim of this work is to establish by TEM influences a number of factors on the structure of phosphor-containing silicas obtained by template method in weak acidic conditions.



1 **2** **3**

Fig.1. The microphotos of the samples **1**-**3**, obtained by TEM.

The literature indicates the inability of the synthesis of ordered structures with the over 20-25% functionalized agent content in the reaction solution [2]. The micrograph of sample **1** (~10% of the trifunctional silane, Fig.1) clearly indicates the presence of a hexagonal structure. The pores location subordinates to elements of hexagonal system, also characteristic for sample **2** (~20% of the trifunctional silane, (Fig. 1). Note that content of trifunctional silane for sample **3** is about 33%. Thus, for this sample it was found only ordered domains (Fig. 1).

1. *Livage J*. The sol gel process: present and future // Transformation of Organometallic Common and Exotic Materials: Design and Activation. 1988. P. 255–260.
2. *Burkett S.L., Sims S.D. and Mann S.* Synthesis of Hybrid Inorganic-Organic Mesoporous Silica by Co-condensation of Siloxane and Organosiloxane Precursors // Chem. Commun. 1996, P. 1367-1368.