Accepted Manuscript

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PII: S0144-8617(17)31010-X

DOI: http://dx.doi.org/10.1016/j.carbpol.2017.08.126

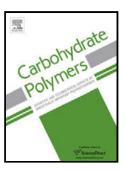
Reference: CARP 12733

To appear in:

Received date: 5-6-2017 Revised date: 26-8-2017 Accepted date: 30-8-2017

Please cite this article as: Spiridonov, VV., Panova, IG., Makarova, LA., Afanasov, MI., Zezin, SB., Sybachin, AV., & Yaroslavov, A.A., The one-step synthesis of polymer-based magnetic γ-Fe2O3/carboxymethyl cellulose nanocomposites. *Carbohydrate Polymers* http://dx.doi.org/10.1016/j.carbpol.2017.08.126

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ACCEPTED MANUSCRIPT

The one-step synthesis of polymer-based magnetic γ -Fe₂O₃/carboxymethyl cellulose nanocomposites

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Highlights

- Original one-step procedure was designed for preparation of biocompatible composites from γ-Fe₂O₃ maghemite nanoparticles and carboxymethyl cellulose under mild conditions.
- The nanocomposites form stable dispersions when dissolved in water, sensitive to an external magnetic field.
- The biocompartible maghemite-CMC nanocomposites seem to be promising for encapsulation and delivery of biologically active compounds.

ABSTRACT

A novel one-step procedure is described for synthesizing water soluble biocompatible nanocomposites from maghemite nanoparticles and carboxymethyl cellulose (CMC). The procedure allows the magneto-sensitive nanocomposites with a controlled content of the inorganic phase. The maghemite formation has been proved by X-ray diffraction analysis and Mossbauer spectroscopy. An average diameter of the maghemite nanoparticles is equal to 11 nm according to transmission electron microscopy. As shown by FTIR spectroscopy, the nanoparticles bind to the polymer matrix via electrostatic and coordination

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