



# ONE-STEP SYNTHESIS AND CHARACTERIZATION OF A NEW MAGNETIC POLYACRYLATE NANOCOMPOSITE WITH ANILINE



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## INTRODUCTION:

Polymer/magnetite nanocomposites combine the advantages of both of their features [1]. Polymers were found to be excellent sorbents due to its good mechanical and chemical characteristics that are further extended by magnetite nature in studied nanocomposites. The aim of this work was to obtain a novel magnetic poly(glycidyl methacrylate-co-trimethylolpropane trimethacrylate)-aniline nanocomposite [SGT-Ani] in the process of one-step synthesis.

## EXPERIMENTAL:

- Firstly, the adduct of glycidyl methacrylate and aniline [GMA-Ani] was synthesized.
- Nanocomposite SGT-Ani was prepared by suspension copolymerization of adduct GMA-Ani and trimethylolpropane trimethacrylate (TMPTMA) in the presence of magnetic nanoparticles (10 wt. %) [2].
- SGT-Ani nanocomposite was characterized using FTIR-ATR, FAAS, elemental analysis and optical microscopy.

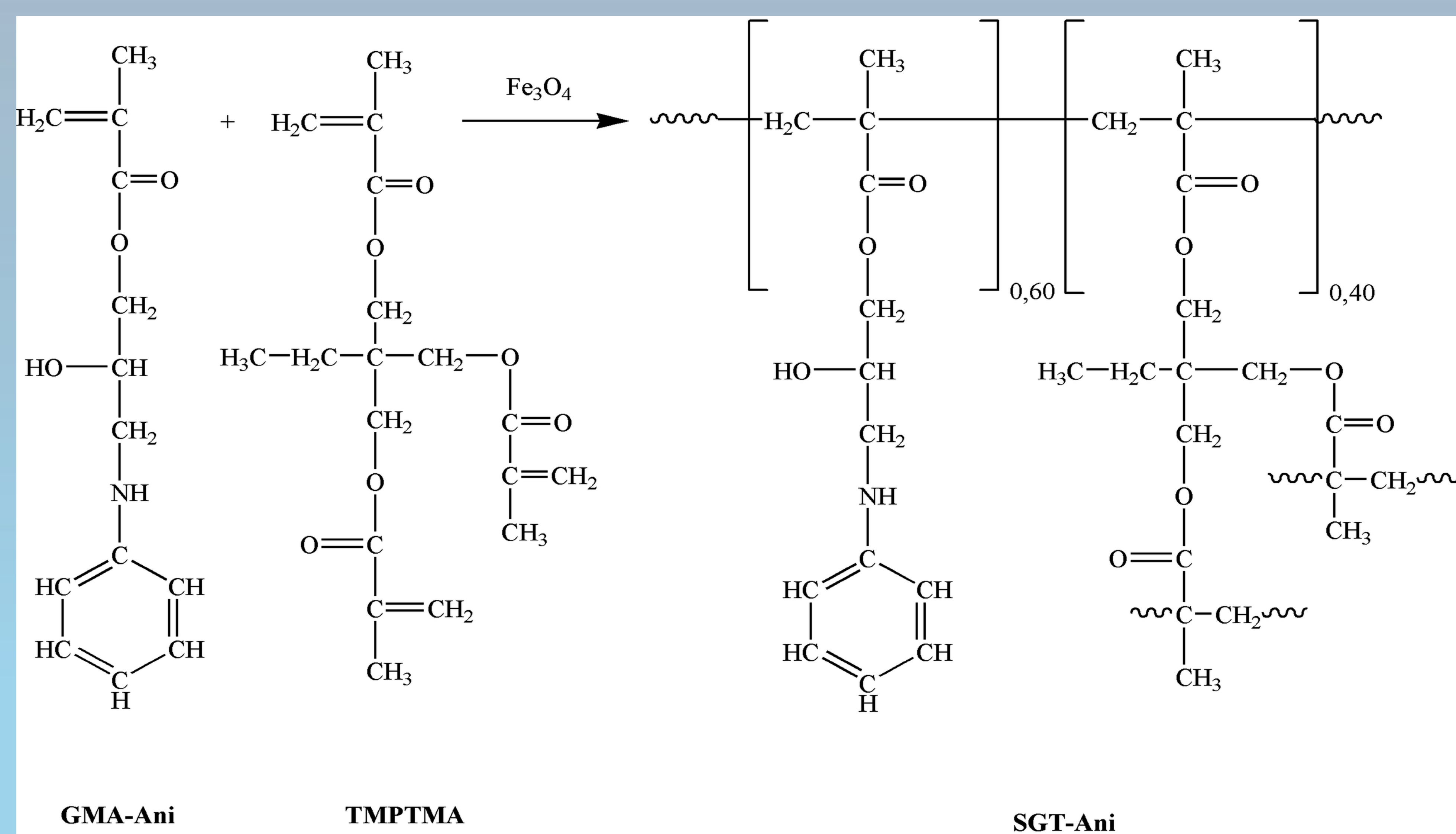


Fig. 1. Reaction scheme for the preparation of the SGT-Ani nanocomposite.

## CONCLUSIONS:

- The FAAS result indicated successful incorporation of magnetite (8.6 wt. %) in SGT-Ani nanocomposite.
- The structure of obtained nanocomposite was confirmed by FTIR analysis.
- Optical microphotography results showed that uniform and spherical SGT-Ani nanocomposite beads were synthesized.

## RESULTS:

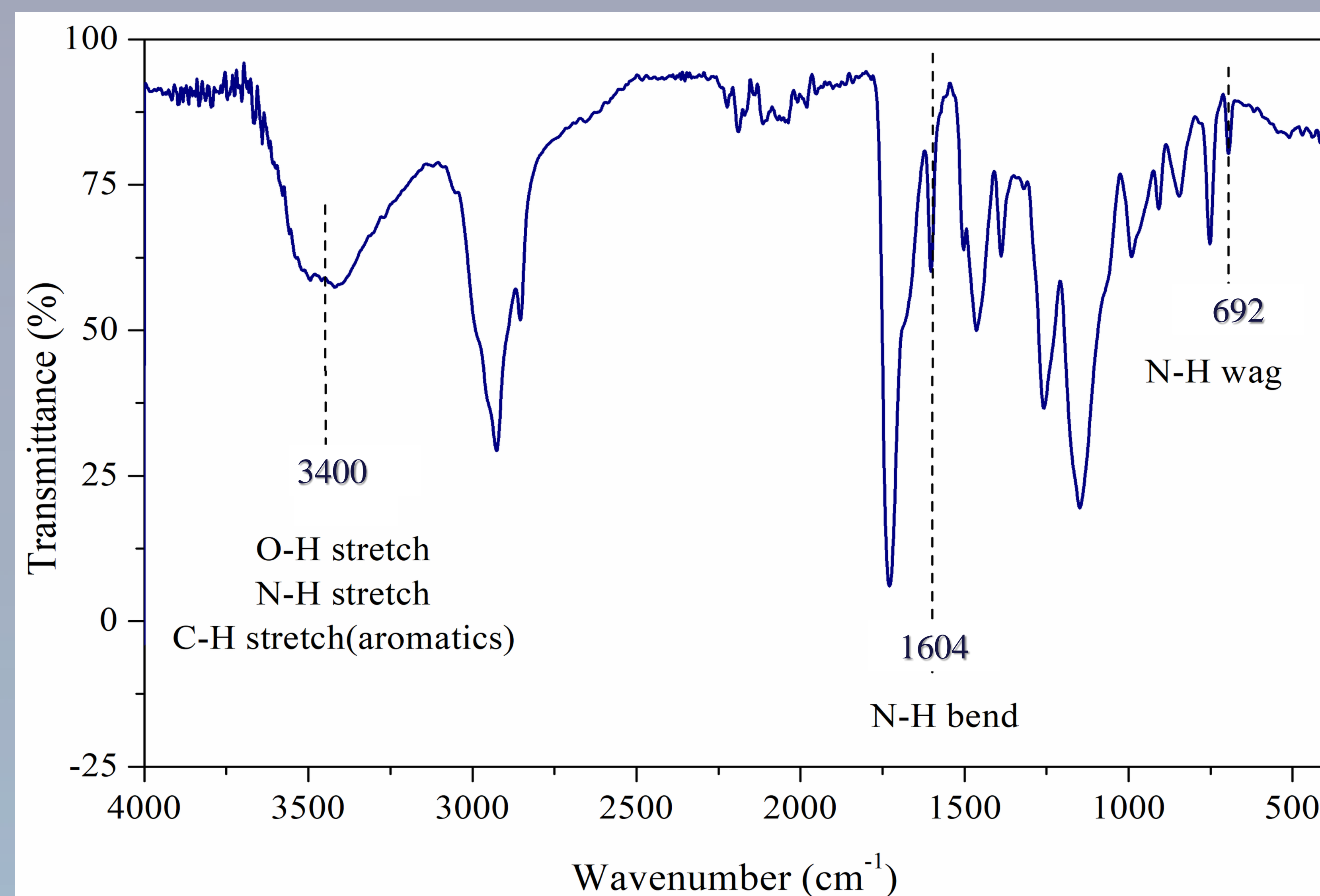


Fig. 2. FTIR spectrum of SGT-Ani nanocomposite

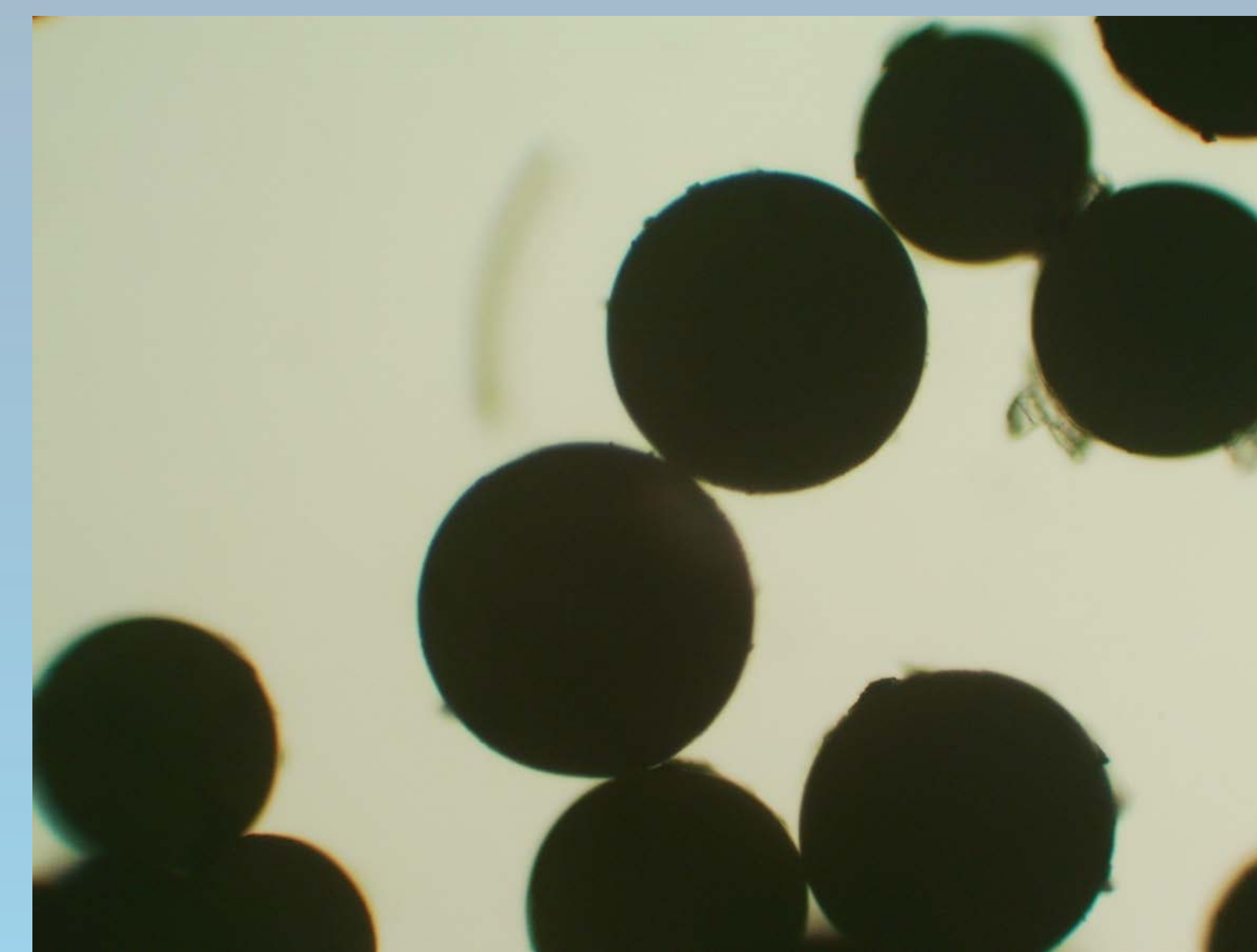


Fig. 3. Optical microscope photography of SGT-Ani beads.

Table 1. The results of FAAS and elemental analysis

Found content (%)			
C	H	N	Fe
64.9	7.7	1.3	6.2

$$C_{\text{Ani}} = 0.9 \text{ mmol/g}$$

$$\text{Fe}_3\text{O}_4 = 8.6 \text{ wt.}\%$$

## References:

- [1] O. Philippova et al. *Eur. Polym. J.*, 47: 542-459 (2011).
- [2] B. M. Marković et al. *J. Alloy. Compd.*, 705: 38-50 (2017).

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