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Investigation of sorbent based on expanded graphite

The purpose of the study is obtaining a sorbent from thermally expanded graphite (TEG) for the purification of wastewater from organic pollutants.
TEG samples were based on graphite intercalation compounds (GIC).GIC were prepared by nitric acid treatment of graphite with subsequent modification with acetic acid and ethyl formate. Then, GIC samples were expanded in a muffle furnace using the thermal shock mode of heating.
The sorption capacity of the expanded graphite to benzene, engine oil and heavy oil was determined.The sorption capacities of TEG samples are 71 g/g, 62 g/g and 43 g/g for benzene, engine oil and heavy oil, respectively.There is an increase in the sorption capacity of the investigated TEG relatively to heavy oil and benzene, in comparison with the TEG that is traditionally used for water purification.

Summary

It has been shown that thermally expanded graphite is an easily accessible material with a high sorption capacity for organic pollutants. The listed characteristics make relevant further studies on the use of TEG as a sorbent.

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