

## Concentration of PAHs from exhaust gases

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The study of the chemical composition of waste gases has a scientific and applied value, since it allows one to determine both the dependence of the component composition of a mixture of polycyclic aromatic hydrocarbons (PAHs) on the pyrolysis conditions and the degree of toxicity of the waste gases of pyrolysis plants. A quantitative analysis of PAHs in gaseous pyrolysis products of a propane-butane mixture during carbon nanomaterials synthesis has shown that at sampling with a small amount of Supelpak-2 adsorbent, widely used in international and domestic methods [1-2], efficient capture of multinuclear aromatic hydrocarbons is not ensured. Therefore, an important research issue is the development of a simple and effective method for sampling PAHs with their subsequent GC/MS analysis. The principal essence of the technique is to minimize the size of the cartridge, which is achieved by impregnating two glass fiber filters with organic low-volatile solvents – diethylene glycol, tetraethylene glycol or dimethyl sulfoxide [3]. The latter is characterized by the highest extracting capacity in relation to PAHs.

The developed technique makes it possible to minimize the size of the cartridge and increase the capture efficiency of multinuclear aromatic hydrocarbons (from four rings in a molecule) up to 96–98% in comparison with the solid adsorbent under equal conditions, where the capture efficiency is 1–5%. The established values of the capture efficiency of the measured components are explained by the high extraction ability of DMSO to multinuclear aromatic hydrocarbons.

### References

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- [2] D. Poster et al. Anal. Bioanal. Chem. (2006) 386:859
- [3] S.M. Leshchev et al. Proceedings NAS of Belarus (2019) 55:38 (in Rus.)