Full Paper _____ *Thematic Section:* Research into New Technologies.
Reference Object Identifier – ROI: jbc-02/18-54-5-40 *Subsection:* Physical Chemistry.
Publication is available for discussion in the framework of the on-line Internet conference "*Butlerov readings*".
http://butlerov.com/readings/
Submitted on February 23, 2018.

1,2,4-Triazine and 1,2,4-triazole derivatives sorption under condition of high performance liquid chromatography

© **Irina N. Karaseva**, **Elena I. Demchenko**, and **Svetlana V. Kurbatova***[+]
Department of Physical Chemistry and Chromatography. Samara National Research University.
Acad. Pavlova St., 1. Samara, 443011. Russia. Fax: +7 (846) 334-54-17. E-mail: curbatsv@gmail.com

*Supervising author; [+]Corresponding author

Keywords: high performance liquid chromatography, 1,2,4-triazole and 1,2,4-triazine derivatives, super-cross-linked polystyrene, porous graphitized carbon, octadecylsilica, aqueous acetonitrile solution, retention models, the effect of the eluent composition on retention.

Abstract

The results of of 1,2,4-triazine and 1,2,4-triazole derivatives the investigation by the method of high-performance liquid chromatography using a mixture of water-acetonitrile and nonpolar sorbents of different chemical nature (octadecylsilica, hyper-cross-linked polystyrene, porous graphitized carbon) as the eluent are given. It is noted that the physicochemical properties of these substances are largely determined by the nature of the interaction of the electron-free pairs of the heteroatom and electrons of the cyclic system, as well as the high degree of delocalization of π-electrons. In the paper the dependences between the values of the retention factor and the physico-chemical characteristics of the heterocycles studied were obtained and analyzed. Shown is the fact that the values of the retention factor of the investigated substances, their polarizability, and the volume of molecules are changed. It is noted that deviations from these dependences are probably connected with the manifestation of specific interactions of sorbate molecules with the components of the mobile phase. The dependence of the retention of 1,2,4-triazole and 1,2,4-triazine derivatives on the composition of the mobile phase was studied. The correspondence of this dependence to the Snyder-Sochevinsky, Scott-Kuchera and Horvath models was established using octadecylsilica gel as the sorbent. It is shown that, in accordance with these models, one sorbate molecule displaces from the surface of the sorbent from 1 to 4 molecules of the organic component. In general, a change in the concentration of acetonitrile in the mobile phase makes it possible to vary the retention characteristics of sorbates in a wide range. The retention of 1,2,4-triazole and 1,2,4-triazine derivatives on sorbents of different chemical nature was studied. It was noted that despite the non-polar nature of the sorbents used, the sorption mechanism of the compounds studied on octadecylsilica gel, hyper-cross-linked polystyrene and porous graphitized carbon is characterized by a number of features associated with the manifestation of specific interactions of heterocycle molecules with the surface of the sorbent.

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