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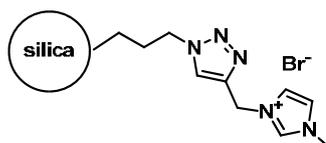
**SILICA GEL WITH COVALENTLY IMMOBILIZED IMIDAZOLIUM SALT
AS A NEW STATIONARY PHASE FOR ION CHROMATOGRAPHY****D. A. Chuprynina, I. A. Lupanova, Dzh. N. Konshina, and V. V. Konshin^a**

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Abstract. The development of new anion-exchange stationary phases with improved selectivity and performance is one of topical problems in modern ion chromatography. Various classes of organic compounds are used as surface modifiers of the stationary phase matrix. In recent years, there is an increased interest in the use of ionic liquids allowing one to vary the nature of cation moiety in a wide range, which provides a way to control properties of materials on their basis. Earlier, our team has prepared and characterized silica gel with covalently immobilized imidazolium salt (with a particle size of 40-60 μm) and studied its ion-exchange characteristics in the solid-phase extraction of Pd(II) in chloride media. It seemed interesting to obtain similar material with a particle size of 8-12 μm and to determine whether it can be used as a stationary phase in ionexchange chromatography.

The research object was a covalently modified silica gel:



Chromatographic properties of the modified silica gel were studied using the single-column non-suppressed version of ion chromatography with conductometric detection, for which purpose a chromatographic column (stainless steel, 150 \times 2 mm) was packed by the suspension technique under pressure and ultrasonic exposure. A mixture of F^- , CH_3COO^- , IO_3^- , Cl^- , NO_2^- , Br^- , NO_3^- , SCN^- , and SO_4^{2-} ions was used as a test model. The modified silica gel showed the highest performance as a stationary phase upon separation of F^- , CH_3COO^- , IO_3^- , Cl^- , NO_2^- , Br^- , NO_3^- , and SCN^- in the case when a pH 4 hydrophthalate eluent was used (17546 tp/m with respect to Br^- and 10000 tp/m with respect to NO_2^-). In using a pH 5.5 eluent, it became possible to determine the strongly retained SO_4^{2-} ion. Under selected conditions of analysis, the peak resolution of determined anions varied from 0.74 to 3.3. The LODs of Cl^- , Br^- , NO_3^- , and NO_2^- were from 1.6 to 3.8 mg/L and the LOD of SO_4^{2-} was 12.3 mg/L.

References

1. Konshina, D. N., Lupanova, I. A., Mazur, A. S., Konshin, V.V. Solvent Extraction and Ion Exchange. doi.org/10.1080/07366299.2019.1665242

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