Our Studies on Chiral Recognition and Enantioseparations In 2019

Bezhan Chankvetadze

e-mail: jpba_bezhan@yahoo.com

Institute of Physical and Analytical Chemistry, Department of Chemistry, School of Exact and Natural Sciences, Tbilisi State University, 3, Chavchavadze avenue Tbilisi, Georgia

In this presentation our research results on chiral recognition and enantioseparations published in 2019 are shortly summarized. References **1**, **5** and **8** are book chapters and review papers summarizing various aspects of chiral recognition and enantioseparations in high-performance liquid chromatography (HPLC) and capillary electrophoresis (CE). Reference 2 deals with enantioseparations of native amino acids with polysaccharide-based chiral columns in supercritical fluid chromatography (SFC). Reference **3** describes separation of brombuterol enantiomers in CE and explains structural mechanisms of chiral recognition based on nuclear magnetic resonance (NMR) spectroscopy. References **4** and **6** deal with thermodynamic description of enantioseparation process in HPLC with polysaccharide-based chiral columns and explanation of some unusual observations in this field. Reference **7** describes application of novel polysaccharide-based chiral stationary phase in nano liquid chromatography and capillary electrochromatography (CEC) while reference **9** describes separation of enantiomers of novel chiral sulfoxides in HPLC.

References:

[1] B. Chankvetadze, Enantioseparations by High Performance Liquid Chromatography Using Polysaccharide-Based Chiral Stationary Phases – An Overview, (Chapter 6) in G. Scriba (Ed-r) Chiral separations, 3rd Edn, Springer, 2019, 93-126.

[2] E. Lipka, A-E. Dascalu, Y. Messara, E. Tsutsqiridze, T. Farkas, B. Chankvetadze, Separation of enantiomers of native amino acids with polysaccharide-based chiral columns in supercritical fluid chromatography, J. Chromatogr. A, 1585 (2019) 207–212.

[3] A. Gogolashvili, E. Tatunashvili, L. Chankvetadze, T. Sohajda, M. Gumustas, S. Ozkan, A. Salgado, B. Chankvetadze, Separation of brombuterol enantiomers in capillary electrophoresis with cyclodextrin-type chiral selectors and investigation of structure of selector-selectand complexes by using nuclear-magnetic resonance spectroscopy, Electrophoresis 40 (2019) 1904-1912.

[4] I. Matarashvili, G. Kobidze, A. Chelidze, G. Dolidze, N. Beridze, T. Farkas, B. Chankvetadze, The effect of temperature on separation of enantiomers with coated and covalently immobilized polysaccharide-based chiral stationary phases, J. Chromatogr. A, 1599 (2019) 172-179.

[5] S. Fanali, B. Chankvetadze, Some thoughts about enantioseparations in capillary electrophoresis, Electrophoresis, 40, 2019, 2420-2437.

[6] M. Maisuradze, G, Sheklashvili, A. Chokheli, I. Matarashvili, T. Gogatishvili, T. Farkas, B. Chankvetadze, Chromatographic and thermodynamic comparison of amylose tris(3-chloro-5-methylphenylcarbamate) coated or covalently immobilized on silica in high-performance liquid chromatographic separation of the enantiomers of select chiral weak acids, J. Chromatogr. A 1602 (2019) 228-236.

[7] G. D' Orazio, C. Fanali, A. Gentili, S. Fanali, B. Chankvetadze, Comparative study on enantiomer resolving ability of amylose tris(3-chloro-5-methylphenylcarbamate) covalently immobilized onto silica in nano-liquid chromatography and capillary electrochromatography, J. Chromatogr. A 1606 (2019) 460425 (8pp).

[8] B. Chankvetadze, Recent trends in preparation, investigation and application of polysaccharide-based chiral stationary phases for separation of enantiomers in high-performance liquid chromatography, Trends in Analytical Chemistry, 122 (2020) 115709 (13pp).

[9] Z. Shedania, R. Kakava, A. Volonterio, T. Farkas, B. Chankvetadze, Separation of enantiomers of chiral sulfoxides in high-performance liquid chromatography with polysaccharide-based chiral selectors and aqueous-acetonitrile as mobile phase, J. Chromatogr. A, 1609 (2020) 460445 (11pp).