MAGNETIC ASSISTED SURFACE ENHANCED RAMAN SPECTROSCOPY (MA-SERS) AS A PROMISING TOOL IN A DETECTION OF PHYSIOLOGICALLY ACTIVE COMPOUNDS AT ULTRA-TRACE CONCENTRATION LEVELS

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Abstract

Recent trends in medicine accompanied with a substantial progress in the fields of molecular biology and physiology increase demands on a development of fast and reliable analytical procedures aimed on the analysis of molecular targets frequently present in complex matrixes at ultra-trace concentration levels. One of interesting alternatives to already established procedures is Magnetically Assisted Surface Enhanced Raman spectroscopy (MA-SERS) (1,2).

MA-SERS utilizes surface functionalized nanocomposites, composed of magnetic and noble metal nanoparticles, which allow a simple magnetic separation of selected targets and their consecutive analysis using an effect of a surface enhanced Raman scattering. In this work, several cases will be shown. The developed MA-SERS analytical platform was utilized in the analysis of physiologically active compounds including dopamine(3) and immunoglobulin G(4).

Keywords: SERS, nanocomposites, magnetic, dopamine, IgG

REFERENCES:

[1]   Shi, Z.; Wang, T.; Lin, H.; Wang, X.; Ding, J.; Shao, M. Nanoscale 2013, 5 (20), 10029–10033.

[2]   Song, J.; Duan, B.; Wang, C.; Zhou, J.; Pu, L.; Fang, Z.; Wang, P.; Lim, T. T.; Duan, H. J. Am. Chem. Soc. 2014, 136 (19), 6838–6841.

[3]   Ranc, V.; Markova, Z.; Hajduch, M.; Prucek, R.; Kvitek, L.; Kaslik, J.; Safarova, K.; Zboril, R. Anal. Chem. 2014, 86 (6), 2939–2946.

[4]   Balzerova, A.; Fargasova, A.; Markova, Z.; Ranc, V.; Zboril, R. Anal. Chem. 2014, 86 (22), 11107–11114.

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