

7th World Congress on

Mass Spectrometry

June 20-22, 2018 | Rome, Italy

Structural investigation of aromatic hydrazones and their complexes by ESI MS/MS

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Biological systems have difficulties to differentiate between Fe³⁺ and Ga³⁺ ions due to their nearly identical ionic radii, same charge, preferred coordination number and chemical behavior. However, Ga³⁺ lacks the redox activity of iron (3+/2+ redox chemistry) and is marked as “Trojan Horse” in biological systems. Aroylhydrazones can act as neutral, monoanionic or dianionic ONO tridentate ligands. In this lecture the coordination abilities of aromatic hydrazones derived from nicotinic acid hydrazide and differently substituted 2-hydroxybenzaldehydes towards Fe³⁺ and Ga³⁺ will be discussed. Stability constants and the stoichiometry of the corresponding M³⁺: hydrazone complexes in MeOH/H₂O media were determined spectrophotometrically. Mass spectrometry was used for structural characterization of the complexes in solution. The MS/MS spectra and fragmentation pathways of ligands and the complexes will be presented.

Recent Publications:

1. K D Mjos, J F Cawthray, E Polishchuk, M J Abrams and C Orvig (2016) Gallium(III) and iron(III) complexes of quinolone antimicrobials. Dalton Transactions 45:13146–13160.
2. T Benković, A Kendel, J Parlov-Vuković, D Kontrec, V Chiş, S Miljanić and N Galić (2018) Aromatic hydrazones derived from nicotinic acid hydrazide as fluorimetric pH sensing molecules: Structural analysis by computational and spectroscopic methods in solid phase and in solution. Spectrochimica Acta Part A 190:259–267.

Biography

Nives Galić completed her BSc in Chemistry in 1992 at University of Zagreb; MSc in 1995 and; PhD in Analytical Chemistry in 1999. In 2011, she was elected for the position of Associate Professor and became Head of the Division of Analytical Chemistry. She has published over 30 papers which have been cited over 700 times. She was supervisor of 25 diploma thesis and two PhD theses (+ 6 in progress). She is a Leader of the project funded by Croatian Science Foundation.

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