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**To:**

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### RESPONSE


to the Doctor of Philosophy thesis of Eugeny Zapolotsky (Евгений Заполоцкий)  
“Molecular structure, paramagnetic properties and molecular dynamics of coordination  
compounds of lanthanides as studied by NMR in solutions”

The work of E. Zapolotsky is devoted to the study of molecular structure and conformational dynamics of complexes of paramagnetic lanthanide cations with certain classes of molecules (polyaminocarboxylates as EDTA and DOTA, bis-diisobutyl-dithiophosphinate, 1,10-phenanthroline) by means of NMR spectroscopy. According to the summary (autoreferat) of the thesis, he took part at the strategy and planning of experiments and the registration of NMR spectra and at the interpretation of obtained results very significantly. The author has applied the theoretical analysis of paramagnetic chemical shift for solution structure extraction for some sulfur-bonded lanthanide complexes using developed suitable softwares. Applied by E. Zapolotsky approach we consider as one of the most valuable results of this work due to opportunity to expand solution structure information for the lanthanide complexes with any symmetry. Also describing molecular dynamics by NMR of EDTA-complexes of lanthanides with considering the solution pH is

interesting as an advanced method for studying of intermolecular interaction kinetics in solution.

The Ph.D. thesis of E. Zapolotsky are based on 12 original scientific works, including 3 papers published in journals of international circulation as „Inorganic Chemistry“ and „Polyhedron“. Taking into account all formal aspects of the dissertation as well as the original results of experiments and advanced structure determination developments we can state that the present work of Eugeny Zapolotsky meets the main requirements to Doctor of Philosophy thesis in Lithuania and other EU countries. We also think that some results obtained by E. Zapolotsky will find applications in related studies and projects in Vilnius University in the Faculty of Physics as well as in the Department of Radiology, Nuclear Medicine and Medical Physics and maybe in future in a joint project with Institute of Inorganic Chemistry RAS (Novosibirsk).



  
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