

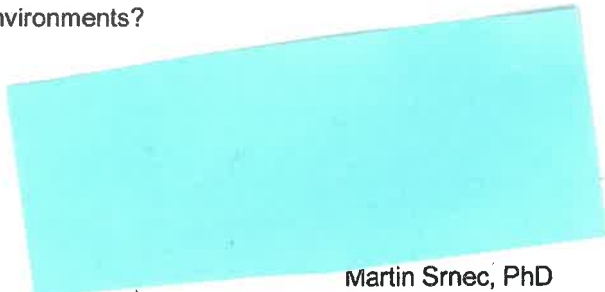
Review on the dissertation thesis of Olga Dvořáčková done by Martin Srnec

The dissertation thesis of Olga Dvořáčková, based on the results published in three international scientific journals, is focused on acid/base properties and reactivity of square planar complexes containing mostly the platinum ion. The dissertation consists of three major parts: first, the introduction, in which the candidate presents this type of complexes and their role in anti-cancer therapy; second, the short presentation of the applied theoretical methods and tools; third, the discussion of the results on the effect of the electron donating/accepting abilities of the ligands on the free energy of activation for the hydrolysis reactions of platin complexes.

This is a revised version of the previously submitted dissertation, which failed to be defended. Most of my criticism was (at least partially) addressed in the revised version. This includes a better interconnection of sections on motivation/background and theory with the section presenting the results. Here, I would just like to add that I would appreciate even more if the main research goals of the doctoral candidate were formulated even more clearly and placed in the context of the research of others, to show how the presented work contributed to filling the knowledge gap. Since the dissertation is overall better than the previous one, I would recommend the presented dissertation for evaluation for the PhD degree.

Here, I suggest a few topics related to the work that may be addressed by the candidate during her defense:

- 1) Please, discuss major punchlines of your work relevant for understading bio-activity of the complexes.
- 2) The candidate mentions that hydrolysis reactions of platinum complexes in the water solution are always endergonic and I wonder whether she considered in her calculations Le Chatelier's principle pushing the equilibrium toward the products due to „high concentration of water molecules in aqueous solution? Can you make a comment?
- 3) How important are relativistic effects on energetics of hydrolysis reactions?
- 4) The cellular environment near the charged DNA interacting with counterions is very different from the homogenous (water) solution, which would certainly perturb energetics of homolysis. May the candidate discuss her findings and their significance for such more realistic environments?



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