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Review letter
Habilitation thesis – Dr. Jiří Pospíšil

In attention to Prof. Jan Hlaváč and Habilitation Committee
Palacky University Olomouc
Faculty of Science | Department of Organic Chemistry
Czech Republic

It is my great pleasure to report on the research activities of Dr. Jiří Pospíšil who is applying for a Habilitation degree.

Dr. Pospíšil has a strong background in the field of synthetic organic chemistry. He was initially educated in Czech Republic, before he made graduate studies in the group of Prof. Markó in Belgium. He made a first postdoctoral stay in Germany, working with Prof. Fürstner (2007) and few years later a second one in France in the group of Prof. Zard (2012). These two postdoctoral stays were the occasion to strengthen his knowledge and expertise in the field of natural product synthesis and radical chemistry. He started an independent work at the Université Catholique de Louvain in Belgium in 2008 as a F.S.R.-FNRS research fellow. He settled in 2014 in the Czech Republic, Palacky University in Olomouc where he created an independent research group as an Assistant Professor.

Dr. Pospíšil has submitted a clear, concise and well written manuscript on his main achievements in the field of organic chemistry. The manuscript is devided into two separate chapters: the first one concerns the development of new methodologies for C-C bond formation, the second one deals with diversity-oriented synthesis.

The work performed on C-C bond formation is definitely of high value and synthetic interest. It derives from Dr. Pospíšil' graduate work and has been largely extended during the following years he has spent as a F.S.R.-FNRS research fellow in Belgium. Dr. Pospíšil has largely expanded the synthetic capacity of the original Julia-Kocienski olefination, *via* one of its variants, namely the Julia-Lythgoe olefination. He developed for instance an olefination reaction based on a sequence of sulfoxide-aldehyde coupling, followed by benzoylation and SmI_2 reduction. This modified protocol allowed for the formation of up to tetrasubstituted alkenes with a moderate to excellent *E* selectivity (*Org. Lett.* **2005**, *7*, 2373 and *Collect. Czech. Chem. Commun.* **2005**, *70*, 1953).

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This useful protocol was employed in the synthesis of a series of natural products for which the formation of an alkene of define chemistry was of crucial importance: (*R*)-goniothalamin (*Tetrahedron Lett.* **2006**, *47*, 5933) and jerangolid D (*J. Am. Chem. Soc.* **2007**, *129*, 3516). Dr. Pospíšil also worked on enhancing the applicability and the *E* or *Z* stereoselectivity of the Julia-Kocienski olefination more especially through the synthesis of allylic alcohols from aldehydes, and the synthesis of dienic motifs (*J. Org. Chem.* **2012**, *77*, 6358). More recently he was also involved in the development of a one pot procedure with Wittig reagents for the synthesis of coumarin derivatives and coumarin based natural products (*Eur. JOC* **2017**, *35*, 5204).

Dr. Pospíšil is also active in the field of diversity oriented synthesis, an area of research that largely expanded during the last 15 years and which is of main importance for the expedite discovery of new active molecules. Dr. Pospíšil' work is mainly based on a Build/Couple/Pair strategy (B/C/P) allowing the formation of various molecules by derivatization from a parent molecule. By capitalizing on his knowledge and expertise in the Julia-Kocienski reaction, he has devised various processes allowing the synthesis of parent alpha-oxo benzothiazolsulfonyl compounds (*J. Org. Chem.* **2011**, *76*, 2269 and *Org. Biomol. Chem.* **2012**, *10*, 1225) that were derivatized under orthogonal conditions to produce either functionalized ketones, stereodefined alkenes and alkynes.

Dr. Pospíšil states that his future investigations will surely concentrate on the second topic mentioned in this thesis, which, I believe, is a perfectly suitable orientation. More specific applications are noted such as the use of solid supports, the application of the developed methods to natural products synthesis in collaboration with some colleagues from the biology department, and the synthesis of isotopically labelled natural products for metabolic analysis.

A search on Web of Science sorted 33 publications that have been co-authored by Dr. Pospíšil. I cannot warrant this number to be exact given the number of namesakes in the database. These publications have been cited more than 400 times globally what corresponds to an excellent average of 16.5 citation / article; 4 articles collect more than 40 citations each. From this perspective, Dr. Pospíšil has a good record - he is publishing regularly in internationally recognized journals.

In summary, I consider Dr. Pospíšil as a talented chemist working in the field of synthetic organic chemistry and more especially in the areas of methodology and diversity oriented synthesis. His contributions are recognized by their publication in high impact factor journals and his

work is regularly cited. I have no doubt that the quality of the research work he achieves, allied to his involvement in training and teaching, will further increase in the future years his visibility in his department and on the international scene. I therefore strongly support him in his application to be awarded the Habilitation.

Yours sincerely,

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