



Posudek oponenta habilitační práce

Masarykova univerzita

Fakulta

Přírodovědecká fakulta

Obor řízení

Analytická chemie

Uchazeč

RNDr. Jiří Urban, Ph.D.

Pracoviště uchazeče, instituce

Ústav chemie, Přírodovědecká fakulta, Masarykova univerzita

Habilitační práce

Polymer-based monolithic stationary phases in the separation of small molecules

Oponent

Doc. RNDr. Miroslav Macka, Ph.D., Professor & ARC Future Fellow

Pracoviště oponenta, instituce

School of Physical Sciences and Australian Centre for Research on Separation Science (ACROSS), University of Tasmania, Private Bag 75, Hobart 7001, Australia

The habilitation thesis of RNDr. Jiří Urban, PhD presents his research over more than a decade, as documented in the associated 17 publications from 2006 to 2017. The featured papers have been published in reputable international indexed journals, mainly *J. Chromatogr. A* and *J. Sep. Sci.*, and creditably also in the highest standing analytical journal *ACS Anal. Chem.* These papers are very well written and presented, show deep knowledge in the field, and proficiently conducted experimental work, followed by very well discussed results.

The candidate has succeeded in producing research that is visible and can stand out in a well-populated field of research in polymer monoliths. His early works are devoted to studies into optimal pore structure aiming at achieving efficient separations including for small molecules, which has been a problem since the inception of polymer monolith some quarter of century ago.

The most significant contribution in the area of design and preparation of polymer monolith has been his work on highly cross-linked (hypercrosslinked) poly(styrene-co-vinylbenzyl chloride-co-divinylbenzene) monolith. These new polymer monolith achieved highly efficient separations of small molecules comparable to silica-based monolith. This work found a lot of interest in the community with 2 original research papers from this work having gathered 100 or more citations. An interesting aspect is the use in dual separation mechanism HILIC separation mode.

The candidate has demonstrated a high level of the most demanding technical skills not only in the preparation and characterisation of polymer-based monolithic stationary phases and their use in separations, but also in hyphenated detection techniques including NMR, and most importantly, end-column electrochemical detection.

It is laudable that his recent research also shows high-significance applicability of his research applied to clinical biochemistry such as in determination neurotransmitters including of dopamine in urine.

The candidate has convincingly shown a consistently high level of research at international level working or collaborating with some of the best leading scientists in the field. His publications (most of them as the 1st or the corresponding author) document that he has grown from a productive researcher to an independent academic as documented by an increasing frequency of being the corresponding author, and with growing output (already 5 published papers in 2017). His publication numerical indicators (Scopus) show close to a thousand citations from 37 documents, with 3 papers having attracted 100 or more citations, and for his stage of career a strong h-number of 19, which document high impact and strong interest in his work.

He managed to establish himself as an internationally acknowledged scientist as also documented by his stays abroad (University of California Berkeley) and presentations at the best international meetings such as recently at the prestigious HPLC-2017 in Prague in June 2017. He has established own research group and been successful in receiving competitive funding.

In conclusion, in my opinion the applicant has proven himself worthy of promotion to Associate Professor level (Doc.) and I unreservedly support his habilitation materials to be accepted.

Dotazy oponenta k obhajobě habilitační práce (počet dotazů dle zvážení oponenta)

Where does the candidate see the future of research in polymer-based monolithic stationary phases going?

Závěr

Habilitační práce RNDr. Jiřího Urbana, Ph.D. **Polymer-based monolithic stationary phases in the separation of small molecules *splňuje*** požadavky standardně kladené na habilitační práce v oboru **Analytická chemie**.

V Hobart, Australia, dne 19.11.2017

