UNIVERSITY OF WATERLOO

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To Whom It May Concern,

I am writing this letter at the request of Miao Yu, who has worked in my lab as a post-doctoral fellow at University of Waterloo for two years. I am happy to provide my reference for Miao, as I consider him as one of the best PDF co-workers, I had pleasure to work with.

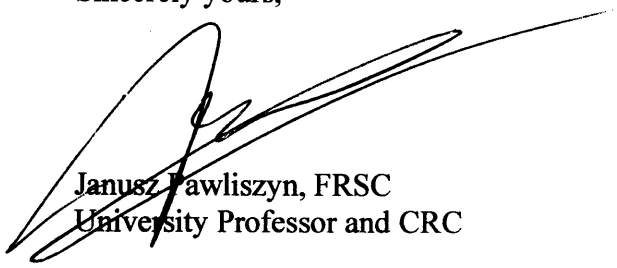
Miao obtained his PhD from China majoring in environmental science with strong background and interest in mass spectrometry particularly data mining. He arrived for Postdoc training in my lab in 2016. In addition to background in advanced analytical instruments such as GC-MS/MS, LS-MS/MS, and GC-qToF, he demonstrated interests in cross-discipline studies such as programming and statistics. I found Miao quickly to develop expertise in data science. In my lab, Miao received training in *in vivo* SPME based metabolomics using LC-qToF and Orbitrap. He also developed software and scripts to process the high-resolution mass spectrometry data and dealing with issues such as batch effect and compounds annotation. He was the lead scientist to investigate the chemical changing occurring during storage to demonstrate capability of in-vivo SPME to monitor unstable compounds. He also developed structure/reaction LC/MS data processing script to facilitate definition of changed which occur during various storage conditions versus in-vivo SPME sampling with immediate determination.

His work in my lab lead to eight journal papers with three first or co-first author articles and one book chapter, including one ES&T letter selected as the best paper of 2018 and one cover paper in Analytical Chemistry. Miao also prepared and delivered a workshop on LC/MS data processing including metabolomics in Waterloo before he left Canada for US in 2018. After his departure he continued working with my team to complete the outstanding manuscripts and he help interpret analytical information by using software he developed. We have remained in touch with him, and we have met personally at different conferences. I am happy to report that he continued development and application of the concept of 'reactomics', the concept conceived by him which is promising to evaluate reaction level changes without annotation for high resolution mass spectrometry data. He has developed related software which facilitates

qualitative/quantitative analysis for unknown compounds or reactions based on statistical analysis. The 'reactomics' method is reducing validation effort in metabolomics and assist in finding new biomarker reactions or biomarker compounds and I anticipate it will have impact on analytical chemistry applied to life sciences. I am happy to see that Dr. Yu found this niche in the research, which would allow him to build an independent research direction, when given opportunity. Miao is very intelligent, hard-working and always ready to assist others. He is very well liked and respected by his colleagues. He had a very good working relationship with all the members of the group and is always ready to lend assistance or to give advice and assistance to the students.

I believe that Dr. Yu will become a great asset in any institute, which would give him opportunity to begin his independent carrier and therefore I recommended him without any hesitation. Please do not hesitate to contact me if you need more information.

Sincerely yours,



Janusz Pawliszyn, FRSC
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