Evaluation of the habilitation committee

for conferring the title **docent/associate professor** in the field of **Chemical Engineering** upon

Fatima Hassouna, M.Sc., Ph.D.

Committee members:

The dean of the Faculty of Chemical Engineering at the University of Chemistry and Technology, Prague, (FCHE UCT Prague) appointed on May 29, 2019 (ev. no. 453-J/300/2019) the evaluation committee for habilitation procedure of Fatima Hassouna, M.Sc., Ph.D. in the field of Chemical Engineering consisting of the below listed members approved by the Scientific Board of the FCHE UCT Prague at its meeting on May 24, 2019:

chair: **prof. Ing. Igor Schreiber, CSc.**
Department of Chemical Engineering, FCHE UCT Prague

members: **doc. RNDr.Ivan Fortelný, CSc., DSc.**
Institute of Macromolecular Chemistry of the CAS
doc. Ing. Jarmila Vilčáková, Ph.D.
Polymer Centre, Faculty of Technology, Tomas Bata University in Zlín
Ing. Olga Šolcová, CSc., DSc.
Institute of Chemical Process Fundamentals of the CAS
doc. RNDr. Ing. Pavel Řezanka, Ph.D.
Department of Analytical Chemistry, FCHE UCT Prague

According to the Act No. 111/1998 on universities, § 72. art.7 and 8 the committee named the following **three opponents:**

1. prof. Ing. Mohamed Bakar, Ph.D. Department of Polymer Chemistry and Technology, University of Technology and Humanities in Radom, Poland
2. prof. Bénédicte Mailhot-Jensen, Département Mesures Physiques & Institut de chimie Clermont-Ferrand, Université Clermont Auvergne, France
3. doc. Ing. Dagmar Měřínská, Ph.D, Department of Production Engineering, Faculty of Technology, Tomas Bata University in Zlín

Opponents were asked to review the habilitation thesis ***Design of advanced functional polymeric materials from environmentally benign methodologies***.

Substantiation of the proposal:

The habilitation committee for the field of *Chemical Engineering* appointed by the Scientific Board of FCHE UCT Prague stated that Mrs. Fatima Hassouna, M.Sc., Ph.D. submitted a habilitation thesis and upon receiving opponent's reviews formulated the evaluation as stated below.

Curriculum Vitae

Fatima Hassouna, M.Sc., Ph.D., was born in 1978 in Algiers, Algeria. She obtained the basic and middle school education in neighboring Tizi-Ouzou. After finishing grammar school in 1997 she studied at the Mouloud Mammeri University in Tizi-Ouzou, where she received a Bachelor of Science degree in 2001, and continued in graduate studies at two French universities, the University of Lille and later at the Blaise Pascal University in Clermont-Ferrand. She obtained two Master of Science degrees in the fields of Macromolecular and Organic Chemistry, and Chemistry of Transformations, respectively. She continued with postgraduate studies at the last named university during 2003-2006 in the field of Physical Chemistry. In 2006 she received a Ph.D. degree by defending her dissertation titled *Investigation of the mechanisms of photo-transformation of water-soluble polymers in aqueous medium*. During 2006-2007 she continued at the University of Clermont-Ferrand as a postdoctoral fellow, in 2007-2008, then took another postdoc position in a subsidiary of Arkema, Inc. in King of Prussia, PN, USA, in the years 2009-2015 she worked as a research scientist in Luxembourg Institute of Science and Technology, Luxembourg. Since 2015 she is at the position of assistant professor at the Department of Chemical Engineering, FCHE UCT Prague.

Pedagogical work

Dr. Hassouna taught at two French universities (National Graduate School of Chemistry in Clermont-Ferrand and University of Auvergne) the laboratory course of Physical Chemistry and seminars from Organic Chemistry, resp. At the UCT Prague, she takes part in teaching the courses of both bachelor and master study programs (in English, for both international and Czech students). Specifically, *Laboratory of chemical engineering I*, and *Chemical Engineering I* (seminars) and *Dispersion Systems I* (lectures) in the bachelor programs *Process Engineering and Management* and *Nano and Micro Technologies in Chemical Engineering* and *Chemical Engineering III* (seminars) and *Heat Transport Processes* (lectures and seminars) in the master program *Chemical Engineering and Bioengineering*.

She was the supervisor of 4 defended bachelor's theses, co-supervisor of another 3 defended ones, currently she supervises 2 bachelor students and co-supervises one more. She was the supervisor of 6 defended master's theses and co-supervisor of another three. Currently she supervises one master student and co-supervises another. Finally, she supervised 3 doctoral students who defended at the Luxembourg Institute of Science and Technology and co-supervised additional 3 students. Currently at the UCT Prague she is the supervisor of one doctoral student and co-supervisor of another 3 students (one of them defended recently). Additionally, she was a supervisor and/or consultant of several students visiting UCT within Erasmus program.

She took part in preparing e-learning texts for teaching two courses, the *Heat Transport Processes* (principal proposer of PIGA grant) and the *Dispersion Systems I* (member of the working team in PIGA grant). Her innovative activity includes

three courses: Organic Chemistry (University of Auvergne), and the two aforementioned courses *Heat Transport Processes* and *Dispersion Systems I*. The core of her activity is in formulating English versions of the e-learning texts to cover continuously growing number of students taking lessons in English (Erasmus student and optionally Czech students)

Her proposed pedagogical project is focused on contributing to improvements and extensions of the curricula for three courses: *Heat Transport Processes*, *Dispersion Systems I* and *Chemical Engineering III*. Her idea is to elaborate or extend those parts of the curriculum of *Dispersion Systems I* (both lectures and seminars) to include topics from her scientific work, the polymer colloids and composite materials, enabling students to get information on the current status of the field. In *Heat Transport Processes* she plans to add interactive examples in MATLAB and COMSOL programs, and especially creating a student-friendly e-learning texts for international students, who frequently have only superficial awareness of the basics and prerequisites needed to efficiently learn how to solve various heat transport problems. Finally, an extension of problems used as tests and to be solved by students at the seminars of the course *Chemical Engineering III* is proposed.

Scientific research activity

Dr. Hassouna is the author or co-author of 27 scientific reports, out of which 25 are published in impacted journals according to the WOS database, and the 2 remaining are chapters in monographs. The sum of IF for the WOS-registered publications is 79 with 479 citations (autocitations excluded). H-index is 12 to the date of submitting the application for habilitation procedure (January 2019, in October 2019 her H-index was 14). Furthermore, she is the author or co-author of 41 presentations at international conferences, out of which 12 were personally presented lectures and the rest are co-authored lectures or posters. She is collaborating with colleagues at several universities including University in Mons (Belgium), LIST (Luxembourg), University of Strasbourg (France), University of Lorraine (France), Center for Advanced Materials Research (Mexico) and Georgia Institute of Technology (USA).

Dr. Hassouna was the principal investigator of 2 projects: i) *New approach of polymer reactive compatibilization*, FNR-CORE project, CRP Henri Tudor, now Luxemboug Institute of Science and Technology - LIST (similar to junior GACR grant) 2014-17-2008, ii) *Design of high-impact bioplastics*, AFR project, 2011-2014, LISP. Furthermore, she was a team member of 6 projects all supported by the LIST, Luxembourg, within 2007-2017. She is currently involved as a team member in two projects supported by Czech grant agencies: i) Controlled assembly of nanoparticles into composite porous materials, GACR 16-22997S, 2016-2019 and ii) Multifunctional nano-clusters as a drug delivery system, AZV 16-34342A, 2016-2019.

Technical and application activity of Dr. Hassouna includes cooperation with Arkema Inc. USA, 2007-2008, PolyOne, Europe, 2012-2015, ESA, 2012-2013 and ongoing cooperation with Zentiva, Sanofi Group, 2015-present. As a result of these activities she took part in the development of industrial prototypes for Arkema and PolyOne.

Activities in scientific bodies and societies

Dr. Hassouna was a member of French society for polymer studies and applications in 2003-2006, the International Research Training Group at LIST in 2010-2015, and since 2018 she is a member of commission for awarding French state stipends in technical sciences at the French Institute in Prague. She also participates in committees for Ph.D. defenses. In addition, she is an associate editor of the journal Chemical Papers and acts as a reviewer for renowned international journals.

Habilitation Thesis

Dr. Hassouna submitted habilitation thesis *Design of advanced functional polymeric materials from environmentally benign methodologies*, which has the format of a general overview of her research and its perspectives, accompanied by her journal publications. The first part of the thesis includes comments to her 25 publications, which are provided as an appendix. This work has been reviewed by all the above mentioned opponents who expressed positive opinions.

Prof. Mohamed Bakar states that in his opinion the thesis meets all the scientific requirements related to obtaining associate professor status, he has several questions and a comment on compatibility among various lines of research that he would like to be addressed at the habilitation defense.

Prof. Benedicte Mailhot-Jensen expresses her opinion that Dr. Hassouna is undoubtedly a recognized specialist of high performance polylactide and its derivatives, as well as in other polymeric materials, the work is solid and of a very good scientific level. She holds a very favorable opinion on the habilitation thesis.

Assoc. Prof. Dagmar Měřínská appreciates scientific level of Dr. Hassouna´s work, emphasizes her ability to cooperate with other senior coauthors and to lead the junior coauthors, and recommends the thesis for defense. She also expressed her opinion that it was not necessary to include all 25 journal publications, because a part of them is not fully bonded with the main topic of the habilitation thesis. In addition, she raised several questions to be addressed at the defense.

Conclusion

Based on the submitted material the committee for the habilitation procedure of Fatima Hassouna, M.Sc., Ph.D. evaluated her former and current pedagogical work and scientific merits. The committee stated that the candidate has the title Ph.D., has been involved in varied pedagogical activity both before and after her engagement at the UCT Prague and carries out a high-impact scientific activity on international level. Her scientific activities conform with the general requirements set out at the UCT Prague including specific requirements for the Faculty of Chemical Engineering (she reports 25 impacted publications in her application, currently there are 3 more, to be compared to 25 required publications). Impact of her research exceeds overwhelmingly the requirements (479 citations vs 30 required). Her pedagogical work also conforms with the requirements but admittedly there are both strong and weak points. Among the strong points is supervision of students. She supervised 6 master students who already defended (to be compared to 6), in addition, she supervised/co-supervised several defended bachelor theses, 3 defended doctoral theses (at LIST) and currently supervises/co-supervises 4 Ph.D. students (one of them recently defended). Her pedagogical work spans 6 years before entering UCT (laboratories and seminars) and 5 years at the UCT (to be compared to required 3 years). The weak point may be seen in having only one year experience with lecturing (Heat Transport Processes, partly Dispersion Systems). Finally, she took part in creating e-learning materials and proposed a pedagogical project to considerably extend the e-learning materials. Taking into account all the above mentioned aspects, the committee concludes that it is in the interest of this university to recommend the habilitation thesis of Dr. Hassouna to be defended in front of the Scientific Board of the Faculty of Chemical Engineering

The members of the committee took part in a secret ballot with the following result:

Number of committee members:	5
Number of positive votes:	4
Number of negative votes:	0
Number of invalid votes:	1

In agreement with § 72 of the Act 111/1998 the habilitation committee based on submitted materials, moral integrity of the candidate and the positive results of the secret ballot (4-0-1), recommends to the Scientific Board of the FCHE UCT Prague to confer the title docent/associate professor in the field of Chemical Engineering on Fatima Hassouna, M.Sc. Ph.D.

Signatures of the committee members:

prof. Ing. Igor Schreiber, CSc. ……..

doc. RNDr.Ivan Fortelný, CSc., DSc. ……..

doc. Ing. Jarmila Vilčáková, Ph.D. …….. .....

Ing. Olga Šolcová, CSc., DSc. ……..

doc. RNDr. Ing. Pavel Řezanka, Ph.D. ……..

In Prague, 25 October, 2019