

PROMOTION RECOMMENDATION  
The University of Michigan-Dearborn  
College of Arts, Sciences, and Letters

Daniel B. Lawson, associate professor of chemistry, with tenure, Department of Natural Sciences, College of Arts, Sciences, and Letters, is recommended for promotion to professor of chemistry, with tenure, Department of Natural Sciences, College of Arts, Sciences, and Letters.

Academic Degrees:

Ph.D.	1997	Michigan State University, Chemistry
B.S.	1990	Lewis University, Romeoville, IL

Professional Record:

2005 – present	Associate Professor of Chemistry, University of Michigan-Dearborn
1999 – 2005	Assistant Professor of Chemistry, University of Michigan-Dearborn
1997 – 1999	Camille and Henry Dreyfus Fellow & Visiting Assistant Professor of Chemistry, Calvin College, Grand Rapids, MI
1990 – 1997	Teaching Assistant, Michigan State University, East Lansing, MI
1988 – 1990	Programming/Chemical Research, Argonne National Labs, Argonne, IL

Summary of Evaluation:

Teaching: Professor Lawson's teaching is significantly capable. He taught several upper and lower division courses in Chemistry: General Chemistry I (CHEM 134) ten times, General Chemistry I and 2 (CHEM 134 & CHEM 136) recitation (five times), and labs (fourteen times), Physical Chemistry (CHEM 368) lecture (six times), and recitation (six times), Presentations in Chemistry (CHEM 493) once, Physical Chemistry (CHEM 469) Lab (four times) and recitation (4 times), and Physiochemical Measurements (CHEM 481) once and the lab four times, and CHEM 348/548 Environmental Chemistry twice. In response to the college call for more CASL online classes, Professor Lawson developed both Introduction to Chemistry (CHEM090), and General Chemistry I (CHEM 134), and in the latter case offered the laboratory on Saturday morning.

Professor Lawson conducts his classes with rigor and a good understanding of how the lower level chemistry classes feed into the upper level classes. He was very committed to General Chemistry (CHEM 134) over the last several years. Examples of comments from students included: "Extremely knowledgeable, interesting, willing to explain concepts," "answers emails quickly." Overall summary evaluations in F10 were 3.6 and 3.64. After two additional offerings and the development of the online version of CHEM 134, student evaluations in the most recent offering were excellent (overall evaluation of 4.5). Professor Lawson also taught CHEM 134 recitations, labs and CHEM 136 labs as well. In these labs/recitations students ranked him between 4.53 and 4.67. Rounding out the lower level classes, Professor Lawson did offer Introduction to Chemistry CHEM 090 in F11 and F12, and the evaluations averaged 4.4, an excellent score for a non-majors class. In

CHEM 368 lecture and recitation, student evaluations were very positive, and students commented favorably about Professor Lawson's preparedness, knowledge, and willingness to answer questions. These comments also are reflected in comments from CHEM 481, CHEM 493, and CHEM 469) Labs/recitations. In CHEM 348/548 Environmental Chemistry, students responded positively to his instruction and excelled in the online poster presentation exercise using Prezi (<https://prezi.com/>).

Research: Professor Lawson's research is excellent. He is strongly motivated to understand the molecular and sub-molecular changes in organic molecule interaction using computational chemistry and quantum mechanics to yield quantitative results comparable with experimental data. Conversely, this theoretical research process can create several models of electron behavior that can aid experimental chemists as well. Undergraduate students work alongside him in his research. Professor Lawson published five peer-reviewed articles and two book chapters; most publications including undergraduates as co-authors. Since being promoted to associate professor, Professor Lawson is very involved in STEM efforts with colleagues across campus. As a teacher/scholar, he thinks a great deal about the instruction of chemistry. All in all, Professor Lawson demonstrates a superb "fit" in our teacher/scholar driven Dearborn campus, combining both theoretical/computational chemistry and STEM research. In support of his research projects, Professor Lawson obtained over one million dollars in grant support from sources both on and off campus.

#### Recent and Significant Publications:

- Lawson, DB, and E. Beregraszay\* (2015). Incremental oxidation of the surface of monolayer and bilayer graphene: A computational study. *Physica E* 68: 164.
- Duran M, Höft M, Lawson DB, Medjahed B, Orady EA (2014). Urban High School Students's IT/STEM Learning: Findings from a Collaborative Inquiry and Design – Based After school Program. *J. of Science Education and Technology* 23: 116.
- Lawson DB, and S. Spaulding\* (2012). Non-fused polyaromatic hydrocarbons: interactions of aromatic and antiaromatic rings through a CC bond. *Journal of Structural Chemistry* 24: 223.
- Lawson DB and A. Walker\* (2012). Cycloaddition of ethene on a series of single walled carbon nanotube. *Computational and Theoretical Chemistry* 981: 31.
- Lawson DB and F. Erdman III\* (2005). The aromaticity of tungstenacyclobutadiene, C<sub>13</sub>W[-ButC-CMe-CMe-]: A DFT/NICS study. *J of Organometallic Chem* 21: 22.
- Lawson DB, Service Learning in Environmental Chemistry: The Development of a Model Using Atmospheric Gas Concentrations and Energy Balance to Predict Global Temperatures with Detroit High School Students. Service Learning and Environmental Chemistry: Relevant Connections ACS Symposium Series Vol. 1177, Chapter 6, pp. 87-103 (2014).
- Duran M, Höft M, Medjahed B, Lawson DB, and Orady EA (Eds) Stem Learning IT Integration and Collaborative Strategies. Springer Publisher, 2016 183 pages. (This book was just published and pre-sales are now going on. This effort was not sent out for external review, but was completed within the last year).

Service: Professor Lawson's service is excellent. He is a member of the Developmental Biology Search Committee. He completed two three-year terms as the chemistry discipline chair. He also served a three-year term on the Faculty Senate, two one-year terms on the Senate Faculty Executive Council, and twice in Faculty Senate P&T decisions. Professor Lawson also contributes to the CASL Distance Learning Committee (DLAC), Online Learning Committee (OLAC), College Advisory Committee on Technology, and participated in one full professor review committee. In the Department of Natural Sciences, he served as the Biochemistry Program chair, DEC member at large, DEC chemistry representative, chair of Dearborn Discovery Core Group for Chemistry 134, and the Science Learning Center Advisory Committee. He also was the chemistry concentration advisor from 1999 -2006. Professionally, he is active in ACS (American Chemical Society) events and will be the program chair for the 2017 ACS Central Regional Meeting in Dearborn. Professor Lawson also reviews for professional journals in his field.

External Reviewers:

Reviewer A: "The majority of the 6 publications that I was asked review involve quantum calculations of organic compounds. The calculations have been performed using state-of-the-art computations methodologies including density functional theory and perturbation theory. The fact that these publications all include undergraduate students as co-authors suggests that these students have received exceptional educational experience, beyond that available to the vast majority of undergraduate students in the US (including my own university)."

Reviewer B: "I would place Prof. Lawson's performance at 8 or 9 out of 10. Compared to where he was at the point of receiving tenure, he has raised the quality and intensity of his game, and appears likely to keep on getting better.....By my lights he has certainly built a track record and a level of experience that would merit his advancing to the level of full professor. I therefore support his promotion and hope that he will have many more years of productivity at UM-Dearborn."

Reviewer C: "I find the quality of the 6 papers of Dr. Lawson that were sent to be excellent. I especially liked the non-fused polyaromatic hydrocarbon paper which was published in the low impact journal Structural Chemistry, but I too have published some of my favorite studies in this journal.....I would rank his commitment to the overall endeavor of chemistry education as high based on the two publications."

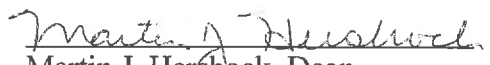
Reviewer D: "Compared to his peer group in computational chemistry, Dr. Lawson's standing may be slightly below average. But adding his work on chemical education, and considering that he is working at a teaching institution, I would rank him in the middle."


Reviewer E: "Lawson has done an excellent job mentored 11 undergraduate students since 2005. This has resulted in 25 presentations at national and regional American Chemical Society meeting, Mid-West Theoretical Chemistry Conferences as well as local meeting...Lawson's CV shows extensive service at the departmental, college and university level. This level of service and leadership is more typical of a full

professor....Dr. Lawson's case for promotion at University of Michigan-Dearborn is exceptionally strong."

Summary of Recommendation:

Professor Lawson is a talented and hardworking scholar and instructor. The Department of Natural Sciences rated his performance as significantly capable in teaching, excellent in research, and excellent in service. His research in theoretical chemistry is complex, and he involves undergraduates in his research and publications. Professor Lawson is dedicated to both his research, and also collaboration with education and science faculty in STEM initiatives. Professor Lawson's publications on the latter subject are of high quality, and indicate his devotion to preparing the next generation of scientists. After leading his chemistry discipline with distinction as chair, Professor Lawson continues to play key service roles such as new faculty hiring and mentoring. We are pleased to recommend, with strong support of the College of Arts, Sciences, and Letters Executive Committee, Daniel B. Lawson for promotion to professor of chemistry, with tenure, Department of Natural Sciences, College of Arts, Sciences, and Letters.

  
Martin J. Hershock, Dean  
College of Arts, Sciences, and Letters

  
Daniel Little, Chancellor  
University of Michigan-Dearborn

May 2016