

May 17, 2007

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Roseanne J. Sension, associate professor of chemistry, with tenure, and associate professor of physics, without tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of chemistry, with tenure, and professor of physics, without tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D. 1986 University of California, Berkeley
B.A. 1981 Bethel College

Professional Record:

2003 – present Associate Professor, Department of Physics, University of Michigan
1999 – present Associate Professor, Department of Chemistry, University of Michigan
1997 – present Associated Faculty, Biophysics Research Division, University of Michigan
1992 – 1999 Assistant Professor, Department of Chemistry, University of Michigan
1989 – 1992 Postdoctoral Associate, University of Pennsylvania
1986 – 1989 Postdoctoral Associate, University of Oregon

Summary of Evaluation:

Teaching – Professor Sension is a dedicated educator who maintains high standards in the classroom. She has made good contributions to the teaching mission of the Department of Chemistry by teaching a variety of essential courses in the physical chemistry curriculum. She developed the curriculum in the junior/senior computational chemistry laboratory course, including developing a laboratory manual and integrating the laboratory with the lecture course. She has been a caring mentor to seven undergraduate students, seven graduate students from diverse programs (chemistry, applied physics, and electrical engineering and computer science), and two postdoctoral fellows.

Research – Professor Sension has gained national and international recognition as a leader in the broad field of chemical physics with a research program that is at the leading edge of femtosecond spectroscopy. She is best known for her fundamental work on ultrafast laser spectroscopy of chemical reaction dynamics and relaxation in fluid environments. Furthermore, she is one of a small number of groups working on the exciting problem of coherent control who has the necessary tools required to make a large impact in this important area. Colleagues hold her in high regard because of her ability to take on difficult problems and bring new insight and knowledge to the field. She is an active participant in the University of Michigan FOCUS physics frontier center, funded by the National Science Foundation.

Recent and Significant Publications:

“Spectral phase effects on nonlinear resonant photochemistry of 1,3-cyclohexadiene in solution,”
with E. C. Carroll, et al., *Journal of Chemical Physics*, 124(11), 2006, 114506 (10 pages).

“Ultrafast excited state dynamics in vitamin B₁₂ and related cob(III)alamins,” with J. J. Shiang, et al., *Journal of the American Chemical Society*, 128(3), 2006, pp. 801-808.

“Time resolved measurements of the photolysis and recombination of adenosyl-cobalamin bound to glutamate mutase,” with D. A. Harris, et al., *Journal of Physical Chemistry B*, 109(38), 2005, pp. 18146-18152.

“The internal conversions of *trans*- and *cis*-1,3,5-hexatriene in cyclohexane solution studied with sub 50-fs UV pulses,” with N. A. Anderson, et al., *Chemical Physics Letters*, 323(3-4), 2000, pp. 365–371.

Service – Professor Sension has made enormous contributions to the function of the department and the chemical physics community. She exercises these service roles thoughtfully and responsibly. She has been particularly active in graduate student recruiting and admissions, and faculty hiring and mentoring. Professor Sension has played an important role in the interdisciplinary chemical physics programs at Michigan and nationally. She has been active in the Optical Physics Interdisciplinary Laboratory (OPIL), ably serving as director of this laboratory and a member of the National Science Foundation Frontier in Physics Council. Finally, Professor Sension has served on the Division of Chemical Physics Executive Committee of the American Physical Society, organized symposia at several conferences, and served as associate editor of the *Virtual Journal of Ultrafast Science* and member of the advisory board of the *Journal of Physical Chemistry*.

External Reviews:

Reviewer (A)

“...Sension is a well recognized and respected member of the femtochemistry community. In the areas of teaching, publication, funding and external service, her record shows all the traits of an experienced and mature member of the academic community.”

Reviewer (B)

“The quality and depth of these papers seems to me to be very high as expected from Roseanne. Furthermore the range of subject matter...was quite extraordinary. The lectures that I have heard Roseanne give at meetings have been extremely well received. She is greatly admired for her careful and insightful analysis of complex situations.”

Reviewer (C)

“Dr. Sension is an enormously creative and talented experimentalist who has made many important contributions to laser technology and to scientific understanding. ... I am extremely excited about recent developments in Dr. Sension’s lab. She has developed a marvelous technology for controlling laser photochemistry using feedback learning. This is one of the hottest areas in physical chemistry today.”

Reviewer (D)

“Her latest papers on control provide the promise for opening up the field to the study of many ‘ordinary’ reactions and to move the field from an exotic specialty to one of widespread applicability. ... I am impressed by her teaching materials: as expected, they are meticulously prepared, accurate and imaginative. I note her recent award for excellence in teaching.”

Reviewer (E)

“There is no question in my mind that Roseanne Sension has accomplished everything that can be expected of a faculty member prior to promotion to the rank of Full Professor. She has a significant national and international presence.”

Reviewer (F)

“With respect to Roseanne Sension’s ranking in femtosecond spectroscopy, I would say that she is considered to be one of the leaders of the field. ... I hope the above [analysis] give you the proper calibration to the high esteem in which I hold Roseanne Sension’s work. It is first rate.”

Reviewer (G)


“Professor Sension is a leader in the field of ultrafast chemistry in condensed phases and has recently been making significant inroads into quantum control in the condensed phase. ... She is among the best ultrafast spectroscopists in the country... She is widely recognized as *the* expert on ultrafast excited state dynamics in hexatriene, cyclohexatriene, and dehydrocholesterol.”

Reviewer (H)

“...Sension is best known for her fundamental work on chemical reaction dynamics and relaxation. ... In addition to her brilliant fundamental work in chemical reactions, Prof. Sension has also explored biological systems. ... These studies reveal Prof. Sension’s versatility and ability to connect her fundamental work to real systems that have true biological relevance.”

Summary of Recommendation:

Professor Sension is recognized as a world leader in her field. She is also a strong teacher and an excellent citizen. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Roseanne J. Sension be promoted to the rank of professor of chemistry, with tenure, and professor of physics, without tenure, in the College of Literature, Science, and the Arts.



Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History, and Dean
College of Literature, Science, and the Arts

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