Approved by the Regents
May 14, 2009

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

Nils G. Walter, associate professor of chemistry, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of chemistry, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	1995	Max-Planck-Institute for Biophysical Chemistry
Diploma	1991	Technical University

Professional Record:

2005 – present	Associate Professor, Department of Chemistry, University of Michigan
2002 – 2005	Dow Corning Assistant Professor of Chemistry, University of Michigan
1999 – 2002	Assistant Professor, Department of Chemistry, University of Michigan
1996 – 1999	Postdoctoral Research Fellow, University of Vermont
1995	Postdoctoral Research Fellow, Max-Planck-Institute for Biophysical Chemistry

Summary of Evaluation:

Teaching – Professor Walter is an enthusiastic and organized lecturer who adds significantly to the teaching effort in Chemistry by his participation in didactic courses and his mentoring of research students in his laboratory. He has taught a variety of courses in the chemical biology and physical chemistry sequences and received excellent student ratings. He has mentored eighteen undergraduate researchers since 2004, including six undergraduate students from underrepresented groups in the sciences. He has also served as a research mentor for 20 doctoral students and eight postdoctoral fellows and visiting scientists.

Research – Professor Walter is recognized as a world leader in the fields of single molecule spectroscopy and RNA biophysics. His research program has expanded significantly since his promotion to associate professor, and he has made seminal contributions to our understanding of RNA dynamics and function. His national and international recognition can be found in 28 manuscripts published in premier journals, 35 invited lectures, a significant number of citations of his work (1782 total citations with 28 average citations per item), and three funded grant proposals from the National Institutes of Health. He is well-positioned to make substantial discoveries in biochemistry and molecular biology in the future.

Recent and Significant Publications:

"Single VS ribozyme molecules reveal dynamic and heterogeneous hierarchical folding toward catalysis," with M. J. B. Pereira, et al., *Journal of Molecular Biology*, 382, 2008, pp. 496–509.

"Dissecting the multi-step reaction pathway of an RNA enzyme by single-molecule kinetic 'fingerprinting'," with S. Liu, et al., *Proceedings of the National Academy of Sciences USA*, 104, 2007, pp. 12634-12639.

"Cations and hydration in catalytic RNA: Molecular dynamics of the Hepatitis Delta Virus ribozyme," with M. V. Krasavska, et al., *Biophysics Journal*, 91, 2006, pp. 626-638.

Rhodes, M.M., Réblová, K., Šponer, J. and Walter, N.G.* (2006) "Trapped water molecules are essential to structural dynamics and function of a ribozyme," with M. M. Rhodes, et al., *Proceedings of the National Academy of Sciences USA*, 103, 2006, pp. 13380-13385 (highlighted as UM News Release August 21, 2006).

Service – Professor Walter is an outstanding citizen and colleague in the Chemistry Department, the Biophysics Program, and the University. In particular, he has worked enthusiastically to recruit and mentor graduate students in both the Chemistry Department and the Biophysics Program, providing leadership on the graduate admissions committees. Furthermore, he has made an important service contribution to the University by organizing the UM single molecule symposium (2006) and chairing the Steering Committee of the UM Center of Single Molecule Analysis (CoSiMA). He is a member of the Data Fraud Inquiry Committee for the Office of the Vice President of Research and the Research Policies Committee of the UM Senate Assembly (SACUA). Outside the university he has an excellent record of reviewing proposals and papers, serving as associate editor of *Biopolymers,* and organizing meetings.

External Reviewers:

Reviewer (A)

"He has published some 30 papers since his promotion and in an era when many good scientists can't get a grant he has six of them with more in the pipeline. Your job as a committee is easy. Promote him… This is a hot new field and Nils is in the forefront."

Reviewer (B)

"Nils is an outstanding scientist who has been one of the central figures in applying single molecule spectroscopy to the investigation of RNA structure and dynamics. …he has made several significant advances… …Nils has contributed a great deal to the research and educational environment of the University of Michigan in biophysical chemistry."

Reviewer (C)

"Nils is one of the leaders in nucleic acid biophysics; indeed, it is in large measure because of Nils' work that the significance of biophysics in nucleic acid catalysts has been amply demonstrated. …there is no question that Nils is an excellent biophysicist, and that he in fact has a disciplinary specialization and degree of scholarship that would be the equal of any organic chemist's."

Reviewer (D)

"…he has become a major figure in the field of RNA dynamics, using state-of-the-art single-molecule methods. He has made many fundamental contributions to our understanding of the ways in which RNA molecules can move to carry out their biological functions. … He is a rigorous, first-class scientist who brings distinction to his institution. There is no question that Dr. Walter's accomplishments merit his promotion to Professor."

Reviewer (E)
"Professor Walter is in a good position to make some of these important discoveries [in biochemistry and molecular biology]. His most important contributions so far have been on the dynamics of ribozyme catalysis. ... Professor Walter's research accomplishments and publications are very strong; they place him among the leaders in the field. I am convinced that he will remain productive in the biophysics of RNA structure and function."

Reviewer (F)
"You should definitely promote Nils Walter to the rank of professor with tenure. ...he has continued to flourish at Michigan and has emerged as one of the leaders in the field of single molecule biophysics. This is a great accomplishment considering that this is a field full of excellent scientists."

Reviewer (G)
"He has been highly productive and energetic at every stage of his career, and has been consistently at the forefront of efforts to apply fluorescence spectroscopy to RNA structure and dynamics. ... The collaborative and entrepreneurial style of Nils' research is one of his great strengths—it allows his lab to remain at the forefront of technology development while bringing new skills or systems to his collaborators. ... He has increasingly taken on leadership roles within the RNA biophysics community."

Summary of Recommendation:
Professor Walter is an outstanding and productive researcher. He has been an effective and dedicated teacher and has made significant service contributions to the Chemistry Department, the Biophysics Program, and the University. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Nils G. Walter be promoted to the rank of professor of chemistry, with 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

May 2009