

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

Approved by the Regents

May 17, 2007

Melanie S. Sanford, assistant professor of chemistry, College of Literature, Science, and the Arts, is recommended for promotion to associate professor of chemistry, with tenure, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D. 2001 California Institute of Technology  
B.S., M.S. 1996 Yale University

Professional Record:

2003 – present Assistant Professor, Department of Chemistry, University of Michigan  
2001 – 2003 National Institutes of Health Postdoctoral Fellow, Princeton University

Summary of Evaluation:

Teaching – Professor Sanford is an excellent instructor and research mentor. Students give her courses and her teaching excellent ratings. She has either developed or updated the curriculum of all her courses, in particular adding sections on modern transition metal-catalyzed transformations. She is committed to mentoring in her research laboratory, where she has worked with six undergraduates and is co-principal investigator of the National Science Foundation Research Experience for Undergraduate Students. She currently has a robust group of ten Ph.D. students and one postdoctoral student. She excels at motivating and energizing the graduate students in her own group as well as in the Department of Chemistry.

Research – Professor Sanford has gained national and international recognition as an expert in the field of organometallic chemistry, which bridges the disciplines of organic and inorganic chemistry. She develops novel synthetic methods and carries out sophisticated mechanistic studies of the chemistry of these reactions. Her methodology has changed the way that synthetic chemists prepare functionalized aromatic and heteroaromatic structures, and has exciting potential for the synthesis and modification of pharmaceutically important substances. She has been extremely productive, publishing numerous high quality papers that have been frequently cited. She has recruited outstanding students to work on her research and has been very successful at obtaining grant funding for her work. She is also highly sought after as a lecturer at national and international meetings.

Recent and Significant Publications:

“Palladium-catalyzed fluorination of carbon-hydrogen bonds,” with K. L. Hull and W. Q. Anani, *Journal of the American Chemical Society*, 128, 2006, pp. 7134-7135.

“Unusually stable Pd(IV) complexes: Detailed mechanistic investigation of C-O bond-forming reductive elimination,” with A. R. Dick and J. W. Kampf, *Journal of the American Chemical Society*, 127, 2005, pp. 12790-12791.

“Regioselectivity in palladium-catalyzed C-H activation/oxygenation reactions,” with D. Kalyani, *Organic Letters*, 7, 2005, pp. 4149-4152.

“Palladium-catalyzed oxygenation of unactivated  $sp^3$  C-H bonds,” with L. V. Desai and K. L. Hull, *Journal of the American Chemical Society*, 126, 2004, pp. 9542-9543. [Highlighted in *Chemical and Engineering News*].

Service – Professor Sanford has served on, and continues to serve on a number of important departmental committees. Her colleagues feel that she makes important contributions and has assumed important leadership roles. Her contributions have been particularly noteworthy in the area of recruiting and mentoring graduate students and identifying and recruiting new faculty. She has had a large impact on graduate students through her service as a PECRUM (Perspectives on Chemistry Research at the University of Michigan) faculty advisor, as an organic student seminar coordinator, and on the Selection Committee for the Chemistry/Biology interface training grant. Professor Sanford conducts her service assignments with energy and with collegiality.

#### External Reviews:

Reviewer (A)

“I believe that Professor Sanford’s contributions to understanding and applying catalytic processes based on palladium(II) and palladium(IV) are elegant, thought provoking and immensely valuable. ...on the basis of her research presentation, I have no doubt she is an accomplished teacher. She is clever and charismatic in presentation.”

Reviewer (B)

“She has shown that she is a thoughtful, skillful and tenacious researcher with boundless energy and a powerful drive to succeed. Her published works show thorough, analytical understanding, penetrating intellect and a cogent sense of organization. ... Clearly the community has taken note of Melanie’s accomplishments as the long list of honors and seminar invitations indicate.”

Reviewer (C)

“Melanie Sanford succeeded admirably in establishing herself as a leader in the important field of C-H activation, especially as it pertains to valuable synthetic intermediates for academic and industrial research. ... Poised and articulate as she is, I am convinced that she is a wonderful colleague and a highly effective teacher-mentor.”

Reviewer (D)

“In recognition of her accomplishments, Dr. Sanford has already received a number of awards such as an Alfred P. Sloan Research Fellow Award, a Beckman Young Investigator Award, and a Presidential Early Career Award for Scientists and Engineers. ... Dr. Sanford has also secured an impressive level of funding, not only from numerous pharmaceutical companies, but also from both the NIH and the NSF in a particularly challenging funding environment.”

Reviewer (E)

“Since her start in 2003, Melanie has produced a publication record marked by high innovation, practicality, and rigor. ... While her studies are focused in one area, CH activation, it can be argued that her pursuit of the problem is broad and the problem itself is important enough to justify this type of effort. ...she is clearly capable of great science. ... Melanie has a bright future, a view obvious to my colleagues and others at top institutions.”

Reviewer (F)

“Melanie Sanford has established an outstanding research program that addresses a truly major problem in chemistry... This is innovative chemistry that can transform chemical industry. ... Her record of publication, her ability to attract excellent students for her group, and her success in obtaining research funding provide strong support for her very early promotion to tenure.”

Reviewer (G)

“...Sanford’s insightful and highly original research concerning applications of transition metal catalysis in synthesis has gained deserved rapid national and international attention. Her work on oxidative functionalization of CH bonds is, in my opinion, the best work in the past several years in this currently highly competitive area... she’s acquired/won everything possible and has spoken at an impressive array of institutions and conferences.”

Reviewer (H)

“The highest levels of innovation and scholarship characterize her program. Sanford would certainly be promoted to tenure in my department, and, I believe, any department in the country.”

Reviewer (I)

“...Sanford is off to a spectacular start in her independent career. In the past several years, no one else in the organic community has had as great an impact so rapidly. ... She has the creativity, drive, enthusiasm and personality required to maintain the excellent program she has already created. She loves to teach and will inspire a new generation of scientists.”

Summary of Recommendation:

Professor Sanford is a creative researcher, an effective mentor and innovative teacher, and has provided excellent service. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Melanie S. Sanford be promoted to the rank of associate professor of chemistry, with tenure, in the College of Literature, Science, and the Arts.



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

May 2007