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

Approved by the Regents
May 20, 2010

Melanie S. Sanford, 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.	2001	California Institute of Technology
B.S.	1996	Yale University

Professional Record:

2006 – present	Associate Professor, Department of Chemistry, University of Michigan
2003 – 2006	Assistant Professor, Department of Chemistry, University of Michigan
2000 – 2001	National Institutes of Health NRSA Postdoctoral Fellow, Cornell University

Summary of Evaluations:

Teaching – Professor Sanford is an inspirational teacher who maintains excellent ratings in the teaching program at all levels. She has revised the curriculum of a graduate course, introduced new undergraduate experiments, and taken on a highly demanding teaching assignment in the honors program with great success. She currently supports a group of twelve graduate students, one postdoctoral associate, and several undergraduate research participants. Her graduate students have won a number of internal and national fellowship awards and, most importantly, have participated in exceptional scientific discoveries.

Research – Professor Sanford is widely regarded as the outstanding leader in her field. She works on transition metal-induced C-H activation and is credited for developing broadly useful methods based on the Pd(II)/Pd(IV) catalytic cycle, and for probing mechanistic aspects with highly sophisticated tools of physical organic chemistry. This effort has stimulated related studies in many other laboratories worldwide. She is also making major progress in a second new field involving small molecule activation that has breakthrough potential. Her work has attracted substantial funding and she has received many industrial awards, six awards from national foundations, and one from the American Chemical Society. She has been invited as plenary lecturer at twelve international symposia, six different Gordon Conferences, and six national meetings. Recently she lectured at the National Organic Symposium. This was the first time that a Michigan faculty member has been invited to the most prestigious national conference in organic chemistry.

Recent and Significant Publications:

"Synthetic and mechanistic studies of Pd-catalyzed C-H arylation with diaryliodonium dalts: Evidence for a bimetallic high oxidation state Pd intermediate," with N. R. Deprez, *Journal of the American Chemical Society*, 131, 2009, pp. 11234-11241.

"Synthesis and reactivity of a mono-s -aryl palladium(IV) fluoride complex," with N D. Ball, *Journal of the American Chemical Society*, 131, 2009, pp. 3796-3797.

Desai, Lopa V.; Stowers, Kara J.; Sanford, Melanie S. "Insights into directing group ability in palladium-catalyzed C-H bond functionalization," with L. V. Desai, et al., *Journal of the American Chemical Society*, 130, 2008, pp. 13285-13293.

"Palladium-catalyzed fluorination of carbon-hydrogen bonds," with K. L. Hull et al., *Journal of the American Chemical Society*, 128, 2006, pp. 7134-7135.

Service – Professor Sanford has made major contributions to departmental service efforts. Her role in the recruitment of new faculty has been especially important, and she serves on three mentoring committees for junior faculty. She is currently the chair of the Graduate Committee. She has also participated in shared grants for instrumentation and for support of undergraduate research opportunities. At the national level, the most noteworthy service role is her appointment to the advisory board for *Journal of the American Chemical Society*, the premier journal for her discipline.

External Reviews:

Reviewer (A)

"The first time I heard Melanie Sanford speak at a national meeting, I was in shock and awe. …Melanie brings across a sense of her excitement about the work that proves infectious among her audience. … Her discoveries are having a strong impact on the field of organic chemistry, and her numerous awards and invitations to speak at international conferences provide evidence of this impact. ...she has clearly shown herself to be one of the most creative individuals I have ever known."

Reviewer (B)

"Professor Stanford is as close to a flawless candidate for promotion to Full Professor as one could find. Sanford has published extensively, is well funded, is a spectacular mentor to her students, gives exciting lectures, travels and speaks widely, and has been highly sought by many of the top five chemistry departments in the country."

Reviewer (C)

"The candidate's field of expertise is one of the most topical and fast moving fields in chemistry and deals with very important chemical issues. … You are indeed fortunate to have her. She is very strong, both mechanistically and synthetically, in a very important field with implications in chemistry, pharmaceuticals, and new sources of energy and materials."

Reviewer (D)

"Her independent research is absolutely outstanding and seminal. She is making a profound impact in organic synthesis and organometallic chemistry. Her international reputation is outstanding, and she has all the hallmarks of developing into an elite group of researchers at a very top level."

Reviewer (E)

"Melanie Sanford has made a great choice of an important research area, has displayed uncommon insight in her selection of targets, oxidants, and catalysts, and has done the fundamental studies to test her hypotheses. Her record of publication, her ability to attract

excellent students to her group, and her success in obtaining research funding demonstrate that she will be a key player in organometallic chemistry now and in the future."

Reviewer (F)
"...Sanford's work is exceptionally innovative and displays an astonishing degree of insight. ... Melanie is likely the top organometallic/catalytic chemist of her age group. ... Michigan should promote her as soon as possible..."

Reviewer (G)
"Melanie is clearly a star, one of the leaders of her generation of organic/organometallic chemists, and a wonderful colleague. It is hard to imagine how the case for promotion could be any stronger. ... Melanie would receive promotion to full professor at...any University in the world."

Reviewer (H)
"Her research involving the palladium (II)/palladium (IV) manifold is especially insightful and elegant. ... She has a first class record of scholarly recognition including being on the JACS [*Journal of the American Chemical Society*] Editorial Advisor Board as well as being the recipient of many awards... Dr. Melanie Sanford is an excellent scientist."

Reviewer (I)
"Melanie's independent work at Michigan has blossomed spectacularly... She has shown that she is a thoughtful, skillful and tenacious researcher with boundless energy and a powerful drive to succeed. ... The palladium-catalyzed oxy-functionalization reaction is a remarkable discovery of great utility. Indeed, prior to this body of work, Pd(IV) could be invoked only with great trepidation. Now, the textbooks have to be rewritten."

Summary of Recommendation:
Professor Sanford is the world leader in her field. She is an inspirational teacher and an excellent colleague. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Melanie S. Sanford 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 2010