

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

Nathaniel K. Szymczak, 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. 2007 University of Oregon
B.S. 2002 University of Illinois, Urbana-Champaign

Professional Record:

2010 – present Assistant Professor, Department of Chemistry, University of Michigan
2009 – 2010 Post-doctoral Associate, California Institute of Technology
2007 – 2009 Post-doctoral Associate, Massachusetts Institute of Technology

Summary of Evaluations:

Teaching – Professor Szymczak has an excellent teaching record. He has taught two undergraduate courses and two graduate courses. Student evaluations of his courses have largely been above 4.0 and within the range of other very successful teachers. With the support of a Third Century Initiative grant, Professor Szymczak successfully revised a 400-level laboratory course, which was a traditional cookbook-style laboratory where students are given a series of steps to carry out. He updated it as an innovative authentic research design where students are given a problem and must use their knowledge to develop a hypothesis and then plan experiments to test that hypothesis. Professor Szymczak has mentored fourteen undergraduate students (nine have graduated) and ten graduate students (five have graduated). The number of undergraduate students is exceptional and the number of graduate students is comparable to other successful assistant professors in chemistry. Notably several of the undergraduate students have been co-authors on publications.

Research – Professor Szymczak is an inorganic chemist with a focus on the design and creation of catalysts based on a metal ion such as ruthenium or copper, an important area in this sub-discipline with practical and commercial applications. He has published 23 papers while at UM with an impressive seven in the *Journal of the American Chemical Society*, *Angewandte Chemie*, or *Chemical Science*, top tier journals in chemistry. All of his other publications are in well-respected peer-reviewed journals. This is strong productivity and the rate of publications is accelerating which suggests that momentum in his research program is growing. Professor Szymczak has also raised \$2.65 million in funding, including a National Science Foundation CAREER award and National Institutes of Health RO1 grant.

Recent and Significant Publications:

“Hydrogen bonds dictate the coordination geometry of copper: Characterization of a square planar Cu(I),” with E. W. Dahl, *Angewandte Chemie International Edition*, 55, 2016, pp. 3101-3105.

“Upgrading ethanol to 1-butanol with a homogeneous air-stable Ruthenium catalyst,” with K.-N. T. Tseng, et al., *Chemical Communications*, 52, 2016, pp. 2901-2904.

“Modular attachment of appended Boron Lewis acids to a Ruthenium Pincer catalyst: Metal–ligand cooperativity enables selective alkyne hydrogenation,” with K.-N. T. Tseng and J. Kampf, *Journal of the American Chemical Society*, 33, 2016, pp. 10378-10381.

“Nitrite reduction by copper through ligand-mediated proton and electron transfer,” with C. M. Moore, *Chemical Science*, 6, 2015, pp. 3373-3377.

Service – Professor Szymczak has served on several important departmental committees, including Graduate Admissions (five years), Safety, and Graduate. He organizes the BIG Bioinorganic super group meetings and the Ohio Inorganic Weekend Conference – both at Michigan. Professor Szymczak served on the Advisory Committee for the provost’s Seminar on Engaged Learning. He has also engaged in outreach, such as Science Saturdays that expose high school students from underrepresented backgrounds to the sciences

External Reviewers:

Reviewer (A)

“...[Professor Szymczak] has built an original, productive and remarkably innovative program in transition metal catalysis. ...[he] has made major, innovative and impactful contributions to catalyst invention and optimization using this underdeveloped approach [of secondary interactions]. ...Szymczak has compiled an overwhelming case for award of tenure.”

Reviewer (B)

“His research has tackled important, difficult problems, and he has published exceptionally high quality, impactful research in prominent journals. I find his creative scholarly contributions to be superb, and the trajectory of his research program to be quite compelling.”

Reviewer (C)

“I believe that my assessment is consistent with the numerous accolades that he has already received. These include an NSF career award, a Dreyfus Teacher Scholar Award and a Sloan Research Fellowship. His funding is also quite impressive... He has my enthusiastic and wholehearted support!”

Reviewer (D)

“He has discovered multiple sets of catalysts that are, in many cases, among the best available for the model reactions that he has studied. ...the case for promotion of Prof. Szymczak is very strong. He is a very talented and imaginative scientist whose record and trajectory indicate that he will be successful for the long term.”

Reviewer (E)

“I have an extremely high regard for...[Professor Szymczak] as a scientist and a scholar, and I have been fascinated by the impactful, creative work his research group has executed while at Michigan. Based on his exceptional productivity...[his] promotion is both timely and richly deserved.”

Reviewer (F)

"...Szymczak reported a very creative work in *J. Am. Chem. Soc.* on the Oxidant-Free Conversion of Primary Amines to Nitriles. ... More recently he has developed a beautiful proton switchable catalyst for the hydroboration of nitriles. ... In short, there is no question in my mind he ranks with the cream of the crop in creativity and output."

Reviewer (G)

"...Prof. Szymczak is a very creative scientist who is well suited to excel as an academic researcher. He has already demonstrated a remarkable level of accomplishment in several distinct areas during his independent research career. The very fast and impressive start to his independent career at Michigan suggests that he will rapidly become one of the leading scientists of his generation. ...[he] is one of the few most talented chemists [in his cohort] in the world today."

Reviewer (H)

"...his record of accomplishment is quite impressive, and...his work is creative, thorough, and of the highest quality. He is a rising star in the synthetic inorganic chemistry community who is well-deserving of promotion and tenure."

Reviewer (I)

"After reading the files you sent me, my conclusion is that...[Professor Szymczak] is doing spectacularly well. ... [his] research is well-funded, published in the best journals, and recognized both nationally and internationally. I generally review about two outside tenure/promotion cases a year, and in terms of numbers and impact...[his] scholarship is among the strongest I have seen in many years."

Summary of Recommendation:

Professor Szymczak has developed a creative approach to catalyze chemical reactions based on ligands that bind to metals and control the reaction from both the first and second coordination sphere. He has taught at all levels with distinction and innovated a new course design with success. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Nathaniel K. Szymczak be promoted to the rank of associate professor of chemistry, with tenure, College of Literature, Science, and the Arts.



Andrew D. Martin, Dean
Professor of Political Science and Statistics
College of Literature, Science, and the Arts

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