

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

Pavel Nagorny, 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	Harvard University
B.S.	2001	Oregon State University

Professional Record:

2010 – present	Assistant Professor, Department of Chemistry, University of Michigan
2007 – 2010	Post-doctoral Fellow, Memorial Sloan-Kettering Cancer Center, New York

Summary of Evaluations:

Teaching – Professor Nagorny’s overall teaching is at a high level. He has taught two undergraduate and two graduate courses, including a large service class. Student evaluations across the board have been good with the trend showing improvement in each successive term. His evaluations are comparable to experienced teachers in the department. Professor Nagorny developed a new 200-level course, “22 Ways to Think About Drugs.” This course is a creative way to illustrate the role of chemistry in a topic of great interest and is a welcome addition to the department’s curriculum. Professor Nagorny is mentoring undergraduate and graduate students in research with success. His four Ph.D. graduates have all received excellent placement in industry.

Research – Professor Nagorny is an organic chemist with interests in the synthesis of natural products and the development of new chemical tools for specific types of reactions. His research program has been highly productive with seventeen papers published in peer-reviewed journals, including an impressive seven papers in the two top chemistry journals. His type of research is important because it can provide insight into how reactions work in different contexts and paths to making useful molecules (e.g., drugs). In the area of natural products, Professor Nagorny has developed an elegant synthesis of complex steroids. These are challenging molecules but of great interest for medicinal properties. In the area of reaction development, Professor Nagorny has developed catalysts based on phosphoric acid that can control the precise arrangement of atoms around a carbon atom in ring-structures known as spiroketals. He has developed a mechanistic understanding of these reactions and models that explains how selectivity is achieved. These tools promise to be of great value for chemical synthesis and are already being taken up by other researchers.

Recent and Significant Publications:

- “Studies of the mechanism and origins of enantioselectivity for the chiral phosphoric acid-catalyzed stereoselective spiroketalization,” with Y. Y. Khomutnyk, et al., *Journal of the American Chemical Society*, 138, 2016, p. 444.
- “Concise enantioselective total synthesis of cardiotoxic steroids 19-Hydroxysarmentogenin and Trewianin Aglycone,” with W. Kaplan and H. R. Khatri, *Journal of the American Chemical Society*, 2016, 138, p. 7194.

“Concise enantioselective synthesis of oxygenated steroids via sequential Copper(II)-catalyzed Michael addition/intramolecular Aldol cyclization reactions,” with N. Cichowicz, et al., *Journal of the American Chemical Society*, 2015, 137, p. 14341.

“Chiral Phosphoric Acid-catalyzed enantioselective and diastereoselective spiroketalizations,” with Z. Sun, et al., *Journal of the American Chemical Society*, 134(19), 2012, p. 8074.

Service – Professor Nagorny has participated in the departmental Graduate Committee (two years), faculty search committees (two years), and Graduate Admissions Committee (three years), among others. At the national level, he organized a national symposium at the University of Michigan and participated in National Science Foundation review panels, among other activities. He is conscientious in his duties and his service is at the level expected for his rank.

External Reviewers:

Reviewer (A)

“...Prof. Nagorny arrived at the University of Michigan with tremendous potential and the great expectations that go with it. ... My view of Prof. Nagorny’s independent work is that he has delivered on this promise in most exciting ways. Perhaps his signature project is the development of chiral Bronstead acid-catalyzed reactions... The science that followed this initial report was exciting and important both for the new directions that emerged, and for the rigor of study that was associated.”

Reviewer (B)

“Your decision is an easy one, as Professor Nagorny has developed an exceptional research program that combines exploratory reaction development with complex target-directed total synthesis. ... The use of this approach to construct cardenolides...is spectacular... By all metrics of scholarship, Pavel Nagorny is off to an excellent start at Michigan.”

Reviewer (C)

“In his first major paper in this area (JACS 2012)...[Prof. Nagorny] developed an asymmetric synthesis of spiroketals... ..I can say without doubt that this is a seminal paper in the field, addressing the *key* gap in existing methodologies... ..Prof. Nagorny has also devoted attention to natural product synthesis, developing a strikingly concise and modular approach to cardiotonic steroids (JACS 2015, JACS 2016). ...[he] has made important, creative, and scholarly contributions to the field of organocatalysis and is recognized as an emerging leader...”

Reviewer (D)

“Dr. Nagorny has built a program in the area of organic synthesis and catalysis... These are important and difficult areas in the field of organic chemistry! ...he is a creative mind, shows good problem selection, technical excellence and a very thorough approach. ...[the papers] that he published are very good!”

Reviewer (E)

“I have found Dr. Nagorny’s research program to be robust, and I have high regard for his intellect and scholarship. I believe that he is an excellent scientist and worthy of a promotion with tenure at this time.”

Reviewer (F)

"...these accomplishments demonstrate clear evidence of an excellent...research program ... Dr. Nagorny has also engaged the positive attention of his peers as evidenced by successfully obtaining funding from both the National Institutes of Health as well as from the National Science Foundation (as well as obtaining a couple of prestigious...faculty awards from the Sloan Foundation and Amgen). ...Nagorny's group has shown that chiral catalysts can *direct* the formation of...ring structures in a kinetically controlled way. ...this is textbook stuff."

Reviewer (G)

"The Nagorny lab at Michigan has been highly productive in a number of areas across the discipline of organic chemistry. ...his efforts directed toward the cardiotonic steroids are simply stunning. ... The breath of the chemistry and the potential application scope is enormous."

Reviewer (H)

"...I believe Pavel has shown himself to be a creative synthetic chemist, through the establishment of a vibrant and impactful research program. ...Nagorny is highly regarded in the synthesis community. His having won the Amgen Young Investigator Award, the Sloan Fellowship, the NSF CAREER, and the Thieme Chemistry Journal Award, are all indicative of his standing in the synthesis community."

Reviewer (I)

"Professor Nagorny has established a vibrant and productive research program focused on synthetic organic chemistry. I support his promotion to the rank of associate professor with tenure and I believe he will continue to make outstanding contributions."

Summary of Recommendation:

Professor Nagorny has been remarkably successful and productive in research, teaching, and in his service at Michigan and beyond. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Pavel Nagorny be promoted to the rank of associate professor of chemistry, with tenure, College of Literature, Science, and the Arts.



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

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