

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

Bart M. Bartlett, 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.	2005	Massachusetts Institute of Technology
A.B.	2000	Washington University, St. Louis

Professional Record:

2014 – present	Associate Professor, Department of Chemistry, University of Michigan
2014 – present	Associate Director for Science and Technology, Energy Institute, University of Michigan
2008 – 2014	Assistant Professor, Department of Chemistry, University of Michigan
2005 – 2008	Post-doctoral Fellow, University of California, Berkeley

Summary of Evaluations:

Teaching – Professor Bartlett’s teaching record is outstanding. He has taught Chem 130 (General Chemistry), Chem 302 (Intermediate Inorganic Chemistry), and Chem 511 (graduate-level Inorganic Chemistry). Student evaluations of these courses are consistently at the high end of whatever course he is teaching. His work in Chem 130 is especially impressive as he took on the task of revamping this course in several ways. What he accomplished is quite important to the department and the university as Chem 130 is a large service class that is often the first science class taken at UM, and is the first exposure to chemistry for many students. Professor Bartlett adopted a new approach, “atoms first”, promoted collaborative learning, and developed a model that allows students to return to material to increase mastery and reduce reliance on high-stakes examinations for grading. He has won several teaching awards, including the Seyhan Ege Junior Faculty Development Award (2013), the LSA Excellence in Education Award (2013), and the LSA Class of 1923 Memorial Teaching Award (2014). Outside the classroom, Professor Bartlett has worked with 24 undergraduate students in research that resulted in twelve papers published with undergraduate co-authors.

Research – Professor Bartlett is an inorganic chemist who focuses on developing semiconductor materials for solar energy conversion and developing the chemistry of magnesium ions needed for next generation batteries. One approach to solar energy conversion is to develop materials that can be activated by light to catalyze the splitting of water to form fuels. Creating a practical photocatalyst is a holy grail in this area. Professor Bartlett has pursued a strategy of using composite materials in which a semiconductor absorbs the light and a separate part uses this chemical energy to catalyze oxygen evolution. In the area of battery chemistry, he has explored magnesium as an earth abundant ion alternative to currently used lithium ions; however, it presently has several limitations as a battery, including a potential window that is too narrow to generate high voltage. Professor Bartlett has investigated the cause of this limit and worked to

develop Mg-based chemistry that enables a wider potential window. He has also continued work on new materials for lithium ion batteries. The work is original and will help guide the field.

Recent and Significant Publications:

“Advancing the chemistry of CuWO_4 for photoelectrochemical water oxidation,” with C. R. Lhermitte, *Accounts of Chemical Research*, 49, 2016, pp. 1121–1129.

“Fluorinated alkoxide-based Magnesium-ion battery electrolytes that demonstrate Li-ion-battery-like high anodic stability and solution conductivity,” with A. J. Crowe and K. K. Stringham, *ACS Applied Materials Interfaces*, 8, 2016, pp. 23060-23065.

“Challenges in co-allayed Titanium oxynitrides, a promising class of photochemically active materials,” with J. J. Brancho, *Chemistry of Materials*, 27, 2015, pp. 7207-7217.

“Chemically bonded TiO_2 -bronze nanosheet/reduced graphene oxide hybrid for high-power Li-ion batteries,” with V. Etacheri and J. E. Yourey, *ACS Nano*, 8, 2014, pp. 1491-1499.

Service – Professor Bartlett’s service record is impressive. He served with distinction on important departmental committees, including the Executive and the Long Range Planning Committees. In both roles, his contributions were substantial and welcome. Another important role was to serve as the faculty advisor for two undergraduate organizations, the UM American Chemical Society undergraduate chapter and the chemistry fraternity. These clubs have gained new vitality with his participation. Perhaps his most significant service role has been as the associate director for science and technology for the UM Energy Institute where he has headed up the battery laboratory. He was involved in setting up this highly successful resource, which enables investigators to make and test battery prototypes. Finally, he has taken leadership positions in the American Chemical Society.

External Reviewers:

Reviewer (A)

“...it is clear that Bart has been very productive for both solar energy conversion and electrical energy storage areas. He has produced a coherent series of publications that address important materials chemistry problems. His post-tenure efforts on the development of new projects and the advancement of the existing projects are well balanced, especially for the electrical energy storage area. He has sufficient funding to continue his research efforts...his new research directions for Mg-ion batteries will enable him obtain additional funds.”

Reviewer (B)

“Dr. Bartlett works in an area of science that is likely to be of growing importance in [the] future—electrocatalysis and photoelectrocatalysis. ... Bartlett did not come up with CuWO_4 because a very few earlier papers exist on water splitting by this material but it is fair to say that Bartlett’s work (*J. Mater. Chem.*, 2011, 21, 7651) brought the material into prominence by providing a means to fabricate it in high surface area thin film form.”

Reviewer (C)

“Prof. Bartlett is an accomplished solid-state inorganic chemist with a strong record of innovative research that uses materials development to address problems at the forefront of various energy technologies. He has a demonstrated capacity for excellence in scholarship and research. His research has attracted broad attention across interdisciplinary lines, and he is

widely recognized as a leader within the solid-state chemistry and energy sciences communities. It is a pleasure to write on behalf of such a strong candidate for promotion.”

Reviewer (D)

“Dr. Bartlett has continued to make unique research contributions around the themes of photo-electrochemical energy conversion and electrochemical energy storage. ... The most exciting of these is the discovery of acid-stable copper tungstate as a photoanode material for the oxidation of water to molecular oxygen. ... Bartlett is contributing admirably to professional service, both at the local and national levels, as well as to outreach and mentoring of students.”

Reviewer (E)

“...Bart’s research efforts lie at an important nexus among synthetic inorganic, materials, and physical chemistries: this is an area of growing importance and one that requires the broad talents of someone like Bartlett to pull off. ... Bartlett has clearly not rested on his laurels post-tenure and is continuing to develop a distinguished research program. ... [he] is a singular talent when it comes to classroom teaching as well as mentoring.”

Reviewer (F)

“I continue to be impressed by his exquisite attention to detail in his research, as well as his desire to contribute to teaching and to service in an impactful, meaningful way. ... He is widely known as an excellent synthetic inorganic/materials chemist, but I think his talent as an electrochemist is now becoming more appreciated.”

Summary of Recommendation:

Professor Bartlett has excelled in research, teaching, and service. He has developed new materials for solar energy conversion and for next generation batteries. He has been a decorated teacher leading some of the largest and most important courses in the chemistry department. He has taken on important leadership roles. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Bart M. Bartlett be promoted to the rank of 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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