

May 17, 2007

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

Udo Becker, associate professor of geological sciences, without tenure, College of Literature, Science, and the Arts, is recommended for the granting of tenure to be held with his title of associate professor of geological sciences, College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	1995	Virginia Polytechnic Institute and State University
B.S./M.S.	1992	Universität Bayreuth
B.S./M.S.	1990	Universität Bayreuth and the University of East Anglia

Professional Record:

2005 – present	Adjunct Professor in Environmental Sciences, Wright State University
2002 – present	Associate Professor, Department of Geological Sciences, University of Michigan
1997 – 2002	Assistant Professor, Department of Geosciences, Universität Münster
1995 – 1996	Research Associate, Manchester University

Summary of Evaluation:

Teaching – Professor Becker is a dedicated instructor who puts considerable effort into his teaching, particularly in preparing materials and using course tools. He carefully monitors the progress of his students and contacts them when they are not in class or have not finished an assignment. He also assumed full responsibility for a fall trip that required extensive preparations and was a huge success with students. Finally, he has consistently taught more than would normally be required of a faculty member. He has done this so that he can properly train his students in computational mineralogy and support his graduate program. Again, the results are impressive, as he has an active group of well-trained graduate students that are all producing scientific papers and presentations at national and international meetings.

Research – Professor Becker’s research combines first principle calculations of the atomic and electronic structure of minerals with advanced experimental techniques to explore the properties of surfaces. Most of his current work focuses on computational mineralogy across a wide range of problems. Professor Becker has a strong publication record with more than 40 papers in the top journals of his field. He was recently awarded a substantial four-year National Science Foundation grant to create a Nanoscale Interdisciplinary Research Team.

Recent and Significant Publications:

- “First-principles calculations of the thermodynamic mixing properties of arsenic incorporation into pyrite and marcasite,” with M. Reich, *Chemical Geology*, 225, 2006, pp. 278-290.
- “Interactions between mineral surfaces and dissolved species: From monovalent ions to complex organic molecules,” with S. Biswas, et al., *American Journal of Science*, 2005, pp. 791–825.
- “Dissolution of jarosite: an in situ AFM study,” with B. Gasharova and J. Göttlicher, *Chemical Geology, Special Issue on Sulfate Minerals*, 215, 2005, pp. 499–516.

“Metal island growth and dynamics on molybdenite surfaces,” with K. M. Russo, et al.,  
*Geochimica et Cosmochimica Acta*, 67, 2003, pp. 923-934.

Service – Professor Becker’s service has been solid, and he is a careful and diligent citizen of the Department of Geological Sciences. He has served on the graduate admissions committee, the Turner grant committee, the search committee for the Turner postdoctoral fellows, and is currently on a faculty search committee. He is associate editor for the two top journals in his field and has been co-editor of three special issues published in three top journals.

External Reviews:

Reviewer (A)

“He is one of the most respected molecular environmental scientists [of his generation] working today. ... Of particular importance is the choice of study topics made by Dr. Becker. With a hundred elements and 3000 minerals, molecular scientists have a wealth of problems to study. Dr. Becker has chosen questions that are important in many fields, and he has consistently researched these topics and published significant papers.”

Reviewer (B)

“...I rank Udo well above many well-known and more senior environmentally oriented mineralogists in the U.S. and Europe. ... His scholarly record would almost certainly merit a positive tenure decision at a number of excellent universities...”

Reviewer (C)

“Dr. Becker is a world leader in the application of molecular simulations and surface analyses to geochemical processes. ... Dr. Becker has an impressive record, in terms of publication numbers, impact of his publications, funding history, supervisory history, and contributions of his time to the geochemical and mineralogical communities.”

Reviewer (D)

“Overall, his contributions are first rate. Any institution would want an Udo on its staff. It is particularly his solid background, ability to combine theory and experiment, and vision that makes him a complete scientist.”

Reviewer (E)

“...his enthusiasm, vision, and broad background would make him an excellent teacher in an earth sciences department. ...I think it is very clear that Udo Becker has demonstrated substantial growth in his research while at the University of Michigan. He has obtained significant amounts of outside research funding, and is establishing an international reputation in his area of research.”

Reviewer (F)

“In terms of the geoscience community, Udo is highly regarded both in the US and internationally, as attested to by his selection as an Associate Editor for both *American Mineralogist* and *Geochimica et Cosmochimica Acta*, the premier journals in mineralogy and geochemistry, respectively. He has also organized special journal issues within both geosciences and nanosciences.”

Reviewer (G)

“...the papers I have read are good, and there is little of the ‘stretching’ of data that I have seen (frankly) in other tenure packages. Solid and useful work, and useful to build upon.”

Reviewer (H)

“...Udo is a highly driven, independent scientist. He is more of a leader than a follower. ... Yet, he is always willing to listen to new ideas, and consider new projects. ... His thermochemistry intuition is superb and sophisticated... He is a superb writer...”

Reviewer (I)

“Udo is a talented and dedicated teacher... He gives clear and interesting lectures. In terms of the balance of teaching, publications and grant proposal success I would recommend that he is suitable for tenure at the University of Michigan.”

Reviewer (J)

“Udo Becker is an outstanding scientist, one of a handful of the very best working in the general area of mineral surface science. ... His is an exceptionally strong case...”

Summary of Recommendation:

Professor Becker is a solid teacher, a gifted researcher, and a good citizen. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Assistant Professor Udo Becker be granted tenure to be held with his title of associate professor of geological sciences 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

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