

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

David K. Wehe, associate professor of nuclear engineering and radiological sciences, with tenure, Department of Nuclear Engineering and Radiological Sciences, College of Engineering, is recommended for promotion to professor of nuclear engineering and radiological sciences, with tenure, Department of Nuclear Engineering and Radiological Sciences, College of Engineering.

Academic Degrees:

Ph.D. 1984 University of Michigan, Nuclear Engineering, Ann Arbor, MI
M.S. 1973 University of Michigan, Nuclear Engineering, Ann Arbor, MI
B.S. 1972 University of Michigan, Nuclear Engineering, Ann Arbor, MI

Professional Record:

2001 - 2003 Director, Michigan Memorial Phoenix Project, University of Michigan
1999 - 2000 Associate Director, Michigan Memorial Phoenix Project, University of Michigan
1986 - present Associate Professor (with tenure), Department of Nuclear Engineering and Radiological Sciences, College of Engineering, University of Michigan
1984 - 1986 Laboratory Fellow, Oak Ridge National Laboratory

Summary of Evaluation:

Teaching: Professor Wehe's teaching portfolio is exemplary. His lecturing style is highly motivational and effective, student appreciation is high and Professor Wehe's 14 Ph.D. graduates have been very successful in their post-academic careers. He has graduated 39 M.S. students since 1991 with about half of the students matriculating to the doctoral program. Professor Wehe's main teaching efforts have been in three NERS laboratory courses for which he has received outstanding student evaluation scores. His teaching has been recognized with a number of awards including the State of Michigan Teaching Award and the Outstanding Teacher Award of the NERS Department. Professor Wehe has also twice been named as "A+" Instructor by University's Advice, an award based on student evaluations covering all university faculty.

Research: Professor Wehe has become an internationally recognized leader in his field of environmental radiation detection and imaging, and that he has the requisite leadership and momentum to continue his innovative research. Professor Wehe's research is both fundamental and applied, having led to advances in the understanding of scintillators, compound semiconductors, and silicon micro-detectors; and to significant practical applications in nuclear medicine and nuclear accident scenarios. His current research in the field of environmental radiation detection and imaging is focused on the development of methods and instruments for detecting and imaging intense radiation fields, which might occur in reactor accidents or in homeland security scenarios. The reference letters attest to Professor Wehe's intellectual contributions, creativity, honesty, and high energy level. The quantity of Professor Wehe's publications is more than sufficient, and his work has been published in the top journals in the field. He has an excellent national and international reputation, and his current research is well-positioned for future development. The committee concludes that Professor Wehe has brought distinction to the College of Engineering and the University of Michigan through his outstanding research in the field of ionizing radiation detection and imaging.

Recent and Significant Publications:

- D.K. Wehe, H. Yang, and M.H. Jones, "Observation of ^{238}U Photofission Products," *IEEE Transactions of Nuclear Science* **53**, 1430 (2006).
- M.D. Hammig, D.K. Wehe, and J.A. Nees, "The Measurement of Sub-Brownian Lever Deflections," *IEEE Transactions of Nuclear Science* **52**, 3005 (2005).
- W. Lee, D.K. Wehe, and B. Kim, "Comparative Measurements on $\text{LaBr}_3(\text{Ce})$ and $\text{LaCl}_3(\text{Ce})$ Scintillators Coupled to PSPMT," *IEEE Transactions of Nuclear Science* **52**, 1119 (2005).
- Zhang, F., He, Z., Knoll, G.F., Wehe, D.K., and Berry, J.E., "3D Position Sensitive CdZnTe Spectrometer Performance Using Third Generation VAS/TAT Readout Electronics," *IEEE Transactions of Nuclear Science*, **52**(5), pp. 2009-2016 (2005).
- G.C. Sharp, S.W. Lee, and D.K. Wehe, "ICP Registration Using Invariant Features," *IEEE Transactions on Pattern Analysis & Machine Intelligence* **24**, 90 (2002).
- L.E. Smith, Z. He, and D.K. Wehe, "Hybrid Collimation for Industrial Gamma-Ray Imaging: Combining Spatially Coded and Compton Aperture Data," *Nuclear Instruments and Methods in Physics Research-A*, **462**, 576 (2001).
- Z. He, W. Li, G.C. Knoll, D.K. Wehe, J. Berry, and C. Stahle, "3-D Position Sensitive CdZnTe Gamma-Ray Spectrometers," *Nuclear Instruments and Methods in Physics Research-A*, **422**, 173 (1999).

Service: The service work of Professor Wehe on behalf of his academic and professional committees has been excellent. Several of these activities have involved (or currently involve) heavy responsibilities with a significant commitment of time and effort. Most notably, Professor Wehe served as director of the Michigan Memorial Phoenix Project (including the 2 Megawatt Ford Nuclear Reactor) from 2001-2004. Also, earlier this year, he was named editor of the prestigious journal *Nuclear Instruments and Methods in Physics Research-A*; this is a clear indication of Professor Wehe's high international reputation.

External Reviewers:

Reviewer (A): "Even more importantly, David plays a role in assuring that radiation-detection development is based on solid fundamentals and is carried out in a responsible manner leading to long-term success for our field. In my opinion, David is one of the few powerful University figures pushing for success in this manner. ...the papers David has published himself are extremely well written, informative publications."

Reviewer (B): "His work (which he has done with others) in the development of CZT and the lanthanum halides is leading edge, and his recent work exploring the potential for electron tracking in position-sensitive germanium detectors could provide very significant improvements in imaging and sensitivity. Overall, this breadth of activity is very impressive... Dr. Wehe's research is very highly regarded, and his students have been very successful in their careers. Dr. Wehe has an excellent record of service to the broad scientific community through his active participation on Committees, service as editor of journals, and with the organization of conferences."

Reviewer (C): "With the greatly increased national emphasis on Homeland Security, Dr. Wehe's area of research is now moving out of the border between fields and is becoming a major field of its own. As Dr. Wehe has long been involved in this area, he is well-recognized as one of the leaders of this rapidly emerging science - I am not familiar with any other individuals or research groups world-wide that are as actively involved in imaging large radiation fields as Dr. Wehe. ...given Dr. Wehe's publication list, funding history, ability to direct a research group, disseminate information at international meetings, and general eminence in the field, I would definitely recommend that Dr. Wehe be promoted to the rank of Professor."

Reviewer (D): "David has maintained an excellent publication record since joining the University of Michigan and the range of topics within the field of innovative detector development and gamma-ray imaging systems is truly impressive. I believe that this body of research is both a credit to [Professor] Wehe but also enhances the reputation of the Department internationally. I would judge David's standing and reputation now to be such as to place him firmly in the upper quartile of detector/radiation physicists worldwide."

Reviewer (E): "I have the highest esteem for David Wehe's research accomplishments. By any standard, I consider him as one of the most outstanding scientists in the general field of detectors research and applications, internationally recognized. Thanks to this reputation, he has been recently associated to the editorial board of a major journal of instrumentation, the Nuclear Instruments and Methods... His continuing search for innovative research subjects will create the basis for original projects in the formation of young scholars. I therefore highly recommend that he be confirmed as full Professor..."

Reviewer (F): "His outstanding record of journal publications in the broad area of radiation detection and particularly in the areas of Compton cameras and gamma-ray spectrometers testifies to the high quality of his research work. Further recognition of Dr. Wehe's contributions in the nuclear instrumentation field has been shown by his being chosen as Editor for Nuclear Instrumentation and Methods in Physics Research – Part A, a very key post. Dr. Wehe is internationally respected in the nuclear instrumentation field as an outstanding researcher with the highest integrity and an extremely high energy level."

Reviewer (G): "Dr. Wehe has performed outstanding research and scholarly work in nuclear engineering and sciences, with focus on nuclear instrumentation and information processing... He has published extensively during the past fifteen years in highly respected journals and special issues. Dr. Wehe's contributions to research, teaching, and service have been outstanding during his tenure at the University of Michigan. I support, without any reservation, Dr. David Wehe's promotion to Professor with tenure."

Summary of Recommendation: Professor Wehe has become an internationally recognized leader in his field of environmental radiation detection and imaging, and he has the requisite leadership and momentum to continue his innovative research. Professor Wehe's research is especially well-positioned for future growth and development for Homeland Security applications involving the remote detection of clandestine special nuclear materials. Professor Wehe is an uncommonly dedicated and skilled teacher of undergraduate and graduate students. He has provided exemplary services to the profession and to the University. It is with the support of the College of Engineering Executive Committee that I recommend David K. Wehe for promotion to professor of nuclear engineering and radiological sciences, with tenure, Department of Nuclear Engineering and Radiological Sciences, College of Engineering.



David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

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