

PROMOTION RECOMMENDATION
The University of Michigan-Dearborn
College of Engineering and Computer Science
Department of Mechanical Engineering

Oleg Zikanov, associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering and Computer Science, is recommended for promotion to professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering and Computer Science.

Academic Degrees

Ph.D. 1993 Moscow State University, Moscow, Russia
M.S. 1987 Moscow State University, Moscow, Russia

Professional Record

2005 - present Associate professor, Department of Mechanical Engineering, University of Michigan-Dearborn
2001 - 2005 Assistant professor, Department of Mechanical Engineering, University of Michigan-Dearborn
1999 - 2001 Associate scientist, Florida Atlantic University, Boca Raton, FL
1996 - 1999 Researcher, Center of Physical Fluid Dynamics, Dresden University of Technology, Dresden, Germany

Teaching: Professor Zikanov is rated excellent in his teaching. Both in the meeting on promotion/tenure and in private discussions between the chair and individual faculty members, all the tenure and promotion committee members were very positive about Professor Zikanov's teaching ability and effectiveness. He has made continual improvements since he was promoted to the rank of associate professor and has now become one of the excellent teachers in the ME department. His average effectiveness from student evaluations over the past three years was rated above 3.6 out of 4.0. This places him within the top 15% of ME faculty members. Responses from students interviewed support the written evaluations. Professor Zikanov has also supervised three senior design projects and six capstone design projects since his last promotion. He developed a new course and substantially modified two existing courses.

Research: Professor Zikanov is rated excellent in his research. His research focuses on the subject areas of fluid dynamics and computational modeling of transport processes. He has published one book and 18 papers in refereed journals in his area of expertise since his last promotion in 2005. Some of these papers are published in the best journals in his expertise areas such as *Journal of Fluid Mechanics* and *Physical Review Letters*. In addition, he has published 16 conference papers and has two journal papers under review. Professor Zikanov has been successful in obtaining external research grants from several sources. Since his last promotion, he has successfully obtained over \$350,000 as single PI or lead PI from NSF and DOE. He has published research papers with several of his graduate students in open literature and is currently supervising two Ph.D. students. Both external reviewers and the ME faculty members are highly positive about Professor Zikanov's scholarly contributions to the field of his expertise area and consider his record of publication to be

exceptionally strong. Additionally, Professor Zikanov was the recipient of UM-Dearborn's Distinguished Research Award in 2009.

Recent and Significant Publications:

- Zikanov, O., *Essential Computational Fluid Dynamics*, (book) Wiley Higher Education, 2010.
- Burattini, P., Zikanov, O., and Knaepen, B., "Decay of MHD Turbulence at Low Magnetic Reynolds Number," *Journal of Fluid Mechanics*, vol. 657, pp. 502-538, 2010.
- Krasnov, D., Zikanov, O., Rossi, M., and Boeck, T., "Optimal Linear Growth in Magnetohydrodynamic Duct Flow," *Journal of Fluid Mechanics*, vol. 653, pp. 273-299, 2010.
- Krasnov, D., Zikanov, O., Schumacher, J., and Boeck, T., "Energy Dissipation Rates in Low-Rm MHD Turbulence with Mean Shear: Results for Channel Flow with Spanwise Magnetic Field," *Magnetohydrodynamics*, vol. 45 N2, pp. 155-164, 2009.
- Lyubimov, D.V., Shklyaev, S., Lyubimova, T.P., and Zikanov, O., "Instability of a Drop Moving in a Brinkman Porous Medium," *Physics of Fluids*, vol. 21, p. 014105, 2009.
- Boeck, T., Krasnov, D., Thess, A., and Zikanov, O., "Large-scale Intermittency of Liquid Metal Channel Flow in a Magnetic Field," *Physical Review Letters*, vol. 101, p. 244501, 2008.
- Krasnov, D., Zikanov, O., Schumacher, J., and Boeck, T., "MHD Turbulence in a Channel with Spanwise Magnetic Field," *Physics of Fluids*, vol. 20, p. 095105, 2008.
- Vorobevev, A., Zikanov, O., and Mohanty, P., "A Co-condensation Model for In-flight Synthesis of Metal-carbide Nanoparticles in Thermal Plasma Jet," *Journal of Thermal Spray Technology*, vol. 17 N5-6, pp. 956-965, 2008.
- Vorobevev, A., Zikanov, O., and Mohanty, P., "Modeling of the In-flight Synthesis of TaC Nanoparticles from Liquid Precursor in Thermal Plasma Jet," *J. Phys. D.*, vol. 41, p. 08532, 2008.
- Thess, A. and Zikanov, O., "Transition from Two-Dimensional to Three-Dimensional MHD Turbulence," *Journal of Fluid Mechanics*, vol. 579, pp. 383-412, 2007.
- Vorobevev, A. and Zikanov, O., "Instability and Transition to Turbulence in a Free Shear Layer Affected by a Parallel Magnetic Field," *Journal of Fluid Mechanics*, vol. 574, pp. 131-154, 2007.
- Ai, X., Li, B.Q., and Zikanov, O., "Stability of Electromagnetically-driven Flows in Induction Channels," *Magnetohydrodynamics*, vol. 43, No. 1, pp. 3-32, 2007.

Service: Professor Zikanov is rated excellent in his service. He has served on several department and college committees, including the College Executive Committee. He was instrumental in helping to prepare the self-study report for ABET. He also served as the director for Undergraduate Studies in ME and is currently serving as director of the Bioengineering Program. He has served as a referee for several journals and conference proceedings and has also chaired sessions in conferences.

External Reviewers:

Reviewer A: "Perhaps I can put it this way: Zikanov's count of 8 JFM and 3 Physics of Fluids papers over the past 10 years would be impressive for someone from a major research university, like Cornell University."

Reviewer B: "In the MHD area, Dr. Zikanov made fundamental contributions to the understanding and characterization of turbulence in the presence of a magnetic field. His papers are published in leading journals in fluid mechanics and very scholarly in nature."

Reviewer C: “Dr. Zikanov’s work in MHD is of highest quality and in sufficient quantity to support promotion at this time. I don’t believe I can fully appreciate how one can conduct exceptional scholarship in a school that does not yet have a Ph.D. program in one’s specialty, though I am well aware of the difficulty of publishing in the fluid mechanics community and particularly in the journals that Dr. Zikanov disseminates his work, which are widely considered to be the best in the world.”

Reviewer D: “Over the last decade he has regularly published in some of the best journals in the field including the *Journal of Fluid Mechanics* and *Physics of Fluids*. I am impressed with the range of areas he is able to contribute to including turbulence simulation, transition and the effect of MHD, plasma jets, fuel cells, and materials processing.”

Reviewer E: “Dr. Zikanov is internationally recognized for his research in the area of instabilities and turbulence in magnetohydrodynamic (MHD) flows. He publishes in reputable journals, e.g., *Journal of Fluid Mechanics* and *Physics of Fluids*, the top two journals in the field of fluid mechanics. He has also published in *Physical Review Letters*, the top journal for rapid communications in physics.”

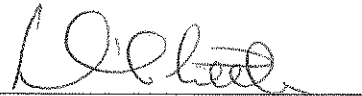
Reviewer F: “His research in the area of computational fluid dynamics, with application to MHD flows, is outstanding. After his promotion to Associate Professor in 2005, within a very short period of time (about five years), he has made a tremendous leap in his professional career, which includes research, research funding, publications, and internal and external committee services.”

Summary of Recommendation:

Professor Oleg Zikanov is a highly distinguished researcher, and his work is judged to be of the highest quality by his peers both in the department and outside the University. He has published one book and 18 papers in refereed journals in his area of expertise since his last promotion in 2005. Some of these papers are published in the best journals in his expertise areas. Professor Zikanov is an excellent teacher at both undergraduate and graduate levels. We are very pleased to recommend, with strong support of the College of Engineering and Computer Science Executive Committee, Oleg Zikanov for promotion to professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering and Computer Science.



Subrata Sengupta
Dean
College of Engineering & Computer Science



Daniel Little
Chancellor
University of Michigan-Dearborn

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