

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Omolola Eniola-Adefeso, assistant professor of chemical engineering, Department of Chemical Engineering, and assistant professor of biomedical engineering, Department of Biomedical Engineering, College of Engineering, is recommended for promotion to associate professor of chemical engineering, with tenure, Department of Chemical Engineering, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2004	University of Pennsylvania, Chemical Engineering, Philadelphia, PA
M.S.E.	2000	University of Pennsylvania, Chemical Engineering, Philadelphia, PA
B.S.	1999	University of Maryland Baltimore County, Chemical Engineering, Baltimore, MD

Professional Record:

2006 – present	Assistant Professor, Department of Chemical Engineering, University of Michigan
2006 – present	Assistant Professor, Department of Biomedical Engineering, University of Michigan
2004 – 2006	Post-doctoral Fellow, Department of Pediatrics, Baylor College of Medicine, Houston, TX

Summary of Evaluation:

Teaching: Professor Eniola-Adefeso's record in classroom teaching, course development, innovation, and mentoring is excellent. Since joining the University of Michigan, she has taught three different courses: two required core courses in the College of Engineering's undergraduate curriculum, and one graduate-level elective course she has developed. The graduate class (Engineering Principles in Drug Delivery and Targeting) is a popular, highly-rated, interdisciplinary, and much appreciated offering. This course is accessible to students from several departments and brings a new and very important topic to the College's graduate curriculum. Professor Eniola-Adefeso's teaching Q1/Q2 evaluations average 4.07 and 3.95, respectively. Her undergraduate classes were among the largest in the college, and one was a sophomore and first course in chemical engineering (ChE 230). She has made steady improvements in her teaching evaluations in all of her courses. Professor Eniola-Adefeso has graduated four Ph.D. students and is currently supervising five more. She also has advised a number of M.S. students and directed several undergraduate projects. Professor Eniola-Adefeso is a recipient of the 2012 University of Michigan Provost's Teaching Innovation Prize.

Research: Professor Eniola-Adefeso has established a strong, impactful and well-funded interdisciplinary research program at Michigan. Her research has the overall goal of designing vascular drug carriers to deliver therapeutics to particular body sites, and it includes a variety of topics aimed at improving both the fundamental understanding and clinical efficacy of drug delivery. These topics are, broadly speaking, (1) design of drug carriers, considering size, shape and behavior in physiological flow conditions, (2) fabrication of drug carriers, and (3) characterization of the target tissue to allow for improved targeting. This interdisciplinary work draws on engineering principles essential to fluid dynamics, reaction kinetics and materials as well as biological expertise in cell biology, immunology, and cardiovascular disease. Professor Eniola-Adefeso's research has been recognized by several awards. These awards include a NSF CAREER award in 2011 and a Department of Chemical Engineering Research Achievement award in 2012. Professor Eniola-Adefeso's work is of significance to both the life science and engineering research communities, and she has effectively applied chemical engineering approaches to address

important clinical and biological problems. External reviewers praise her research and its impact and her ability to tackle difficult biological problems with innovative engineering methodology. Professor Eniola-Adefeso's research program is in high gear and she is actively pursuing a variety of related research topics that have interdisciplinary impact. Her scholarly impact is high and is demonstrated in her publications, funding, visibility, and in her reputation among established senior researchers in the field.

Recent and Significant Publications:

Charoenphol, P., Onyskiw P. and Eniola-Adefeso, O., "Particle-Cell Dynamics in Human Blood Flow: Implications for Vascular-Targeted Drug Delivery," *Journal of Biomechanics*, 2012, in press.

Huang, R.B., Gonzalez, A.L. and Eniola-Adefeso, O., "Laminar Shear Stress Elicit Distinct Endothelial Cell E-Selectin Expression Pattern via TNF α and IL-1 β Activation," *Biotechnology & Bioengineering*, 2012, in press.

Heslinga, M.J., Porter, T.M. and Eniola-Adefeso, O., "Design of nanovectors for therapy and imaging of cardiovascular diseases," *Methodists: Debakey Cardiovascular Journal*, 2012, 8(1), 13-17.

Huang, R.B. and Eniola-Adefeso, O., "Shear stress modulation of IL-1 β -induced E-selectin expression in human endothelial cells," *PLoS One*, 2012, 7(2), e31874.

Charoenphol, P., Mocherla, S., Dubois, D., Namdee, K. and Eniola-Adefeso, O., "Targeting therapeutics to the vascular wall in atherosclerosis - Carrier size matters," *Atherosclerosis*, 2011, 217(2), 364-70.

Huang, R.B., Mocherla, S., Heslinga, M.J., Charoenphol, P. and Eniola-Adefeso, O., "Dynamic and cellular interactions of nanoparticles in vascular-targeted drug delivery," *Molecular Membrane Biology*, 2010, 27(4-6), 190-215.

Charoenphol, P., Huang, R.B. and Eniola-Adefeso, O., "Potential role of size and hemodynamics in the efficacy of vascular-targeted spherical drug carriers," *Biomaterials*, 2010, 31(6), 1392-402.

Heslinga, M.J., Matria, E.M. and Eniola-Adefeso, O., "Fabrication of biodegradable spheroidal microparticles for drug delivery applications," *Journal of Controlled Release*, 2009, 138(3), 235-242.

Service: Professor Eniola-Adefeso has demonstrated a very high level of commitment to service at multiple levels. At the departmental level, she has served on the Graduate Admissions Committee and the Faculty Search Committee. Both of these committees are very time-intensive. On the graduate committee in particular, and in activities that have extended well beyond routine committee service, she worked tirelessly to improve the diversity and excellence of our incoming graduate class. She was considered by a colleague as a key, energetic member of this committee and largely responsible for a reinvigoration of the department's graduate recruiting efforts. Professor Eniola-Adefeso's service for the department also includes membership on the CRLT - Engineering Faculty Advisory Board and the Chair Search Committee for Chemical Engineering. Since arriving at Michigan, her activities for her profession include service as a chair for seven different sessions at the annual AIChE (American Institute of Chemical Engineers) meeting and has served on six review panels for NSF and NIH. In addition, Professor Eniola-Adefeso has served as a reviewer for 17 journals. These demonstrate not only a high level of service to the profession but also a notable recognition of her expertise in the field.

External Reviewers:

Reviewer A: "Dr. Eniola-Adefeso is extremely committed [sic] student mentoring and teaching, as well as curricular development and university service."

Reviewer B: "I think it is fair to say that this is the most holistic approach to the design of vascular targeted drug carriers, an important field to be in, let alone to be one of the leaders in."

Reviewer C: "Her service record is much more extensive than most P&T packages for Assistant Professors that I have seen in the last 3-4 years. She's clearly visible in the field, and she's contributing extensively to her profession."

Reviewer D: "I am extremely impressed by Dr. Eniola-Adefeso's accomplishments during her provisional appointment over the past five years in all areas of research, teaching and service."

Reviewer E: "...I believe that Dr. Eniola-Adefeso has become an excellent investigator with original ideas and a rapidly growing national reputation in her field."

Summary of Recommendation: Professor Eniola-Adefeso is an effective and innovative classroom teacher. She has established a well-funded research program that aims to explore vascular targeted carriers of tags for imaging or drug delivery. She contributes extensively to her department and her profession. It is with the support of the College of Engineering Executive Committee that I recommend Omolola Eniola-Adefeso for promotion to associate professor of chemical engineering, with tenure, Department of Chemical Engineering, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, College of Engineering.



David C. Munson, Jr.

Robert J. Vlasic Dean of Engineering
College of Engineering

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