

**PROMOTION RECOMMENDATION**

The University of Michigan

College of Engineering

Angela Violi, assistant professor of mechanical engineering, Department of Mechanical Engineering, 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 mechanical engineering, with tenure, Department of Mechanical Engineering, associate professor of chemical engineering, without tenure, Department of Chemical Engineering, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, College of Engineering.

Academic Degrees:

Ph.D. 1999 University of Naples, Chemical Engineering, "Federico II", Italy  
 B.S. 1994 University of Naples, Chemical Engineering (Cum Laude), "Federico II", Italy

Professional Record:

2006-present Assistant Professor, Department of Mechanical Engineering, University of Michigan  
 2006-present Assistant Professor, Department of Chemical Engineering, University of Michigan  
 2006-present Assistant Professor, Department of Biomedical Engineering, University of Michigan  
 2005 Adjunct Assistant Professor, Department of Mechanical Engineering, University of Michigan  
 2004-2005 Research Assistant Professor, Department of Chemistry, University of Utah  
 2002-2005 Research Scientist, Center for the Simulation of Accidental Fires and Explosions (C-SAFE), Department of Chemical Engineering, University of Utah  
 1999-2001 Post-doctoral Research Assistant, Department of Chemical Engineering, University of Utah  
 1999-2001 Research Associate, Department of Chemical Engineering, University of Naples "Federico II", Napoli, Italy  
 1995-1996 Research Associate, Institute of Research on Combustion, Napoli, Italy  
 1994-1995 Research Associate, Department of Chemical Engineering, University of Napoli "Federico II", Napoli, Italy

Summary of Evaluation:

Teaching: Professor Violi is an outstanding educator, with a strong record in student mentoring and teaching. She has taken the initiative to develop a new graduate level class in energy processes for novel fuels, as well as to teach and revamp a large introductory undergraduate thermodynamics course, introducing in-class demonstrations, computational modules and a section on current issues related to energy. Her course evaluations rank her among the top teachers in the College of Engineering, with average Q1 and Q2 ratings of 4.10 and 4.23, respectively. Professor Violi takes a sincere interest in helping students succeed both inside and outside the classroom. Students remark about her effective mentoring along with her technical excellence.

Professor Violi is also an excellent graduate student mentor. She currently supervises three doctoral students, all having passed their preliminary exams with two expected to graduate in 2009. (Each student has co-authored journal papers with Professor Violi.) In addition, she has graduated three M.S. students at Michigan and is currently advising a third. She has supervised eight postdoctoral research fellows, five

at Michigan, of various academic backgrounds. She has also co-advised two doctoral students while in a research faculty role at the University of Utah, one of whom graduated in 2005 under her supervision.

Research: Professor Violi's overall research performance is exceptional. She has been studying phenomena that occur in complex reactive systems with large range of time scales and length scales. Her principal research contributions include the development of computational methods bridging the atomistic and mesoscopic scales, and creating and applying multi-scale methods to a wide range of systems, including combustion science, nanoscience, environmental science, and biomedical science. She has made original contributions of a fundamental nature and of enduring academic impact, and has also provided advanced solutions to important problems in a variety of applications. Professor Violi has developed and sustained a high-quality research program at Michigan. She has successfully secured funding as a single PI, including the prestigious NSF CAREER award. At the same time, she has been a valuable contributor in collaborative group programs. Her research projects cover topics such as kinetic mechanisms of real fuels, nanoparticles in the environment, tribology of lubricants, and interactions of nanoparticles with biomolecular assembly. Professor Violi has an impressive publication record in terms of quantity, quality and impact. She has authored or co-authored 41 refereed journal papers in high-quality journals (15 since joining Michigan), and 41 refereed conference papers.

Recent and Significant Publications:

- A Violi, "Science-based model for particle formation from novel fuels," *Journal of Physics: Conference Series*, 125: 012033 (2008).
- S. Choe, R. Chang, J. Jeon and A. Violi, "Molecular Dynamics Simulation of a Pulmonary Surfactant Film interacting with a Carbonaceous Nanoparticle," *Biophysical Journal*, 95 (8) (2008).
- K. Huynh, K. Barriger and A. Violi, "Kinetics Study of the OH + Alkene = H<sub>2</sub>O + Alkenyl Reaction Class," *Journal of Physical Chemistry A*, 112(7): 1436-1444 (2008).
- L. Hyunh and A. Violi, "Thermal decomposition of methyl butanoate: Ab initio study of a biodiesel fuel surrogate," *Journal of Organic Chemistry*, 73 (1): 94-101 (2008).
- S.H. Chung and A. Violi, "Insights on the Nanoparticle Formation Process in Counterflow Diffusion Flames," *CARBON*, 45: 2400-2410 (2007).
- S.L. Fiedler, S. Izvekov and A. Violi, "The effect of temperature on Nanoparticle Clustering," *CARBON*, 45: 1786-1794 (2007).
- K. Chae and A. Violi, "Thermal Decomposition of Decalin: an ab initio Study," *Journal of Organic Chemistry*, 71(22): 8365-8371 (2007).
- A. Violi and S. Izvekov, "Soot primary particle formation from multiscale coarse-grained molecular dynamics simulation," *Proceedings of the Combustion Institute*, 31 529-537 (2007).
- D. Wang and A. Violi, "Radical-molecule reactions for aromatic growth: a case study for cyclopentadienyl and acenaphthylene," *Journal of Organic Chemistry*, 71(22): 8365-8371 (2006).
- A. Violi and A. Venkatnathan, "Combustion-generated nanoparticles produced in a benzene flame: a multiscale approach," *Journal of Chemical Physics*, 125: 0544302 (2006).
- S. Izvekov and A. Violi, "A Coarse-Grained Molecular Dynamics Study of Carbon Nanoparticle Aggregation," *Journal of Chemical Theory and Computation*, 2(3), 504-512 (2006).
- R. Chang and A. Violi, "Insights into the effect of combustion-generated carbon nanoparticles on biological membranes: a computer simulation," *Journal of Physical Chemistry B*, 110(10), 5073-5083 (2006).

Service: Professor Violi is an exemplary "citizen" who has taken on many local, national, and international service duties. She is the course leader for an undergraduate core class (ME235: Thermodynamics I) and has served on several important departmental committees. She has fostered diversity by being active in the Society of Women Engineers, Women in Science and Engineering, and the NSF ADVANCE program. She served as a faculty advisor for female graduates and undergraduates

through the Undergraduate Research Opportunities Program. Professor Violi has also been active externally serving the technical community. She is a member of several professional organizations and has organized conference symposia for the American Chemical Society (ACS) and the American Institute of Chemical Engineers (AIChE). She has served as a reviewer for several journals as well as a reviewer and/or invited panelist/moderator/speaker for various agencies, such as NSF, AFOSR and DoE.

External Reviewers:

Reviewer A: "...her post-graduate work and original contributions as a whole well exceed those of other faculty who have received tenure within the normal 5-6 year period in elite Universities such as Stanford, Caltech, and Princeton to name a few."

Reviewer B: "...her record is so impressive, uncharacteristically so for a person in this early stage in her career. Remarkably, her citation number is 220, excluding self-citations, with an h-index of 11. These are numbers that would be the envy of many, more seasoned, and already tenured, colleagues in her field."

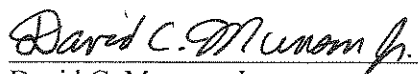
Reviewer C: "...the speakers...were nearly all international experts ... but there was no doubt in my mind after hearing her that her talk was one of the very best, among the top 2 or 3, at the conference."

Reviewer D: "Professor Violi has become internationally known for her groundbreaking and inspiring work on carbon cluster and nanoparticle formation in combustion ..."

Reviewer E: "At the time, I believe this was the first development of multiscale solution techniques within the combustion modeling community .... This was an outstanding technical achievement and was recognized widely in the combustion field ..."

Reviewer F: "Given her past record and intellectual depth and diversity, I have no doubt that Angela will continue to make notable impacts in the combustion research community and maintain her status as a leader in multiscale modeling of nanoparticle formation in reacting flows."

Summary of Recommendation: In summary, Professor Violi has excelled as an assistant professor: she is an exceptional researcher with achievements and contributions being recognized and highly praised by eminent scholars in her field, an excellent educator with strong record of student mentoring and teaching, and an outstanding "citizen" in service. Without a doubt, she is on an exceptional track that places her amongst the top junior faculty members in the country. It is with the support of the College of Engineering Executive Committee that I recommend Angela Violi for promotion to associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, associate professor of chemical engineering, without 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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