

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering

Suljo Linic, assistant professor of chemical engineering, Department of Chemical Engineering, College of Engineering, is recommended for promotion to associate professor of chemical engineering, with tenure, Department of Chemical Engineering, College of Engineering.

Academic Degrees:

Ph.D. 2003 University of Delaware, Chemical Engineering, Newark, DE
B.S. 1998 West Chester University, Physics (minor: Mathematics), Westchester, PA

Professional Record:

2004 - present Assistant Professor, Department of Chemical Engineering, University of Michigan
2003 - 2004 Post-doctoral fellow, Fritz-Haber Institute der Max Planck Gesellschaft, Berlin Theory Department

Summary of Evaluation:

Teaching: Professor Linic has an exemplary teaching record. Since his arrival at UM, he has taught two large required “core” courses, ChE 341 and ChE 344, and received excellent teaching evaluations. His students in these courses describe him as a demanding instructor with high expectations and an effective presentation style. Out of all the ChE faculty, the undergraduates selected him to speak at their graduation dinner, a sign of their admiration and respect. Professor Linic has developed two special topics courses at the 400/600 level (accessible to top undergraduates but taken primarily by graduate students); each has been taught once to about 20 students. He also taught a required graduate course, ChE 528; in all of these he again received excellent teaching evaluations. The graduate student letter writers give high marks to his teaching style, focus on state-of-the-art scientific concepts, and passion for teaching excellence. The graduate-level course also supported the department’s effort in distance learning.

Professor Linic has advised nine Ph.D. and four M.S. students. Two Ph.D. students have already completed their degrees under his mentorship; one is doing a post-doc and then will take a faculty position at another institution. Professor Linic has also mentored eight undergraduate students in research. His passion for teaching has inspired him to propose a new Teaching Fellowship program to be piloted this winter. Professor Linic will serve as a teacher-mentor and will work with a top graduate student in teaching ChE 344.

Research: Professor Linic has demonstrated the ability to create and sustain a vibrant research group that produces high-quality Ph.D. graduates and top-notch scholarly articles. Professor Linic works in the fields of surface science and catalysis. In particular, he uses density functional theory (DFT) calculations to interpret and guide his experiments. The research is directed toward the design and discovery of new materials for catalysis and electrocatalysis.

Professor Linic’s laboratory is one of a very small number globally that engages directly in both experimental and computational/theoretical research. This rare combination gives him the capability to make advances that others cannot. In his research at Michigan, Professor Linic has used experiments, theory, and computing to make three key advances to date: 1) development of a simple model for predicting the electronic structure, and hence activity, of metal catalysts, 2) development of Sn/Ni alloy catalysts that are carbon tolerant and have improved activity maintenance for hydrocarbon processing and, 3) demonstration of the superior catalytic selectivity of single facet Ag nanoparticles. Professor

Linic's graduate students routinely win best paper and best poster awards at nearly every conference in which they participate. Moreover, his first two Ph.D. students have landed post-doc positions in high-profile catalysis labs. Both aspire to an academic career, and one has accepted a faculty appointment.

Professor Linic's work at Michigan has led to 23 refereed journal articles and a number of refereed conference/symposium proceedings to date. All of the journals in which he has published are very good and include the top journals in catalysis and electrochemistry as well as the top chemistry and physics journals with broader scope. In addition to producing scholarly articles, Professor Linic's research has also led to three invention disclosures and two patent applications.

Professor Linic enjoys high visibility both nationally and internationally. He has been invited to present seminars at several U.S. universities, at prestigious Gordon Research Conferences, and at international conferences in China and Japan. He was invited by the DOE to be one of five people (and the only junior faculty member) who wrote their guide "Basic Energy Needs: Catalysis for Energy." He has also been invited to contribute chapters in books on catalysis. His receipt of the 2009 ACS Unilever Award and the 2009 Camille Dreyfus Teacher-Scholar Award is further evidence that he is held in high regard within his professional community.

Recent and Significant Publications:

- E. Nikolla, J. Schwank and S. Linic, "Improving the tolerance of Ni electro-catalysts to carbon-induced deactivation in direct electrochemical oxidation of hydrocarbons on SOFCs by alloying," accepted by *Journal of Electro-chemical Society*, 07/2009
- D. Ingram and S. Linic, "First-Principles Analysis of the Activity of Transition and Noble Metals in the Direct Utilization of Hydrocarbon Fuels at Solid Oxide Fuel Cell Operating Conditions," accepted by *Journal of Electrochemical Society*, 07/2009
- S. Laursen and S. Linic, "Geometric and Electronic Characteristics of Active Sites on TiO₂-supported Au Nano-catalysts: Insights from First Principles," accepted by *Physical Chemistry Chemical Physics*, 07/2009
- S. Laursen and S. Linic, "Strong chemical interactions between Au and off-stoichiometric defects on oxides as a possible source of chemical activity of nano-sized Au adsorbed on the oxide," *Journal of Physical Chemistry C*, 2009, 113, 6689–6693
- E. Nikolla, J. Schwank and S. Linic, "Measuring and Relating the Electronic Structures of Nonmodel Supported Catalytic Materials to Their Performance," *Journal of the American Chemical Society*, 2009, 131 (7), pp 2747–2754

Service: Professor Linic's service record is outstanding. He deeply cares about the department and is willing to tackle time-consuming service activities. He was the advisor for the undergraduate student chapter of the American Institute of Chemical Engineers (AIChE) and is currently on the Graduate Committee helping to lead the effort in the recruitment of our graduate students. In addition to this internal service, he has been active at the local and national level through his work in the Michigan Catalysis Society and as the programming chair for Division 20 of the AIChE.

External Reviewers:

Reviewer A: "He has the amazing ability to perform both experimental and theoretical research with cutting-edge techniques and great expertise. Indeed, I think he may do this more effectively than any other scientist in the country in his age group..."

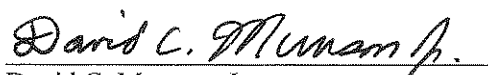
Reviewer B: "I would place Prof. Linic's contributions and his potential among the top 10% of junior faculty..."

Reviewer C: “[Linic is]...the leader of one of the few groups in the world able to address relevant problems by a rigorous and synergistic combination of theory and experiment.”

Reviewer D: “Suljo is one of the top two researchers in the catalysis field in his age group.”

Reviewer E: “...I believe Suljo Linic is one of the [cohort] leaders of the catalysis and surface science community and he is positioned to succeed at the very highest levels in an academic career. ... I believe Suljo would most certainly be promoted to associate professor with tenure at [my institution].”

Summary of Recommendation: Professor Linic has made important contributions to catalysis and surface science through his approach of combining detailed experimental work with state-of-the-art computational research. He is an excellent advisor and teacher. Professor Linic has been active in service within the department and university. He has served his profession in the larger catalysis community. He was just recently selected to receive the 1938E award, given annually to an outstanding junior faculty member in the College of Engineering. It is with the support of the College of Engineering Executive Committee that I recommend Suljo Linic for promotion to associate professor of chemical engineering, with tenure, Department of Chemical Engineering, College of Engineering.



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

May 2010