

January 25, 2017

Dear Members of the CTL Awards Selection Committee,

I am pleased to nominate **Dr. Mark D. Losego**, Assistant Professor in the School of Materials Science and Engineering, for the **CTL/BP Junior Faculty Teaching Excellence Award** for his excellence in the classroom, his innovations beyond the classroom, and his leadership in building an MSE peer-to-peer learning community.

Mark joined the MSE faculty in Fall 2014 and has quickly become one of our most liked and respected instructors despite teaching arguably the most difficult (MSE 3002, Structural Transformations) and most disliked (MSE 2001, Introduction to MSE for non-majors) courses in our undergraduate curriculum. He is an excellent teacher, as evident by his teaching effectiveness scores averaging 4.6-4.7, which are amongst the highest in MSE. Mark's curricula also tackle **THE** grand challenge for post-secondary MSE education in the 21st Century: developing unified courses that merge the traditional disciplines of metallurgy, ceramics, and polymer science. These innovations have led to Mark's curricula being adopted by several of his MSE colleagues.

Particularly noteworthy is his re-design of the introductory materials science and engineering course, MSE 2001, which is required by a majority of GT engineering students, but frequently disliked because of its perceived inapplicability and rote memorization. Mark has made a number of changes to innovate and enhance this course:

- He has inverted the typical sequence of course topics to first introduce materials properties and performance parameters in order to motivate student learning about the fundamental scientific concepts presented later.
- He has adopted best practices from his COS colleagues (chemistry, physics) to automate grading through electronic HW assignments, clicker questions, and multiple choice exams—while maintaining course rigor—allowing us to examine further expanding the size of our sections and reduce our TA loads.
- He has developed ~50 in-class demonstrations (many of which are interactive with an entire 100 student classroom) that further engage students and clarify critical concepts.

I am particularly impressed by what Mark has done with a passing suggestion that I made to him ~2 years ago: *Can you make your demos quantitative?* Since then, Mark has incorporated quantitative assignments with many of his MSE 2001 demos, including calculating the heat capacity of metal blocks, computing diffraction spacings from in-class measurements, and evaluating Weibull statistics for material reliability using full class participation. Mark has even taken these efforts a step further by developing outside-the-classroom guided-instruction projects that promote independent and peer-to-peer learning, including a team competition to

create the toughest ice-newspaper composite materials and a mini independent project that teaches students to use software to visualize crystal structures.

This passion to innovate upon outside-the-classroom learning paradigms has led Mark to become our faculty leader for the new "Maker and Measure Space" in MSE: The Materials Innovation and Learning Laboratory (The MILL). Begun in Spring 2016, Mark has led a student team that has totally transformed ~600 sq ft of laboratory space into an open-access lab that houses multi-material 3D printers, a benchtop SEM with elemental analysis, and mechanical testing facilities. Through Mark's leadership, this group has established a highly functional leadership council that now manages ~15 volunteers that staff the facility in a peer-to-peer learning and training environment for ~20 hrs/week. During the grand opening event this past fall, our External Advisory Board was awed by the transformation of this space, the extent to which the MILL had evolved in the 6 months since their prior visit.

Mark also mentors a full research team of 4.5 graduate students and 8+ undergraduates (in addition to the 14 UGs that UG Shawn Gregory has working on his Inventure team in the Losego Labs, as described in his letter of support). Mark's undergraduate research team has grown so large that last fall he held his own research symposium in the Love atrium featuring ~12 posters just from his undergraduate researchers. This undergraduate research program is now also externally funded through the donations of a GT alumnus. His success as a mentor can be seen in the accomplishments of his students, including 4 PURA winners, 4 MSE Research Scholars, 1 Petit Undergraduate Research Scholar, 1 NDSEG Fellowship winner, 1 AVS Graduate Student Award Winner, 1 Hertz Fellowship Finalist, and an Ideas-to-Serve team competition winner.

Considering all of these accomplishments in his short time with our faculty, it is with the greatest enthusiasm that I nominate Professor Mark Losego for the **CTL/BP Junior Faculty Teaching Excellence Award**.

Yours Sincerely

Naresh Thadhani

Naresh Thadhani

Reflective Statement on Teaching

Mark D. Losego

Assistant Professor, Materials Science & Engineering

Without question, teaching is the most fulfilling part of my job as faculty. While research success is fickle, I am certain that if I teach and mentor well, I can make a lasting impact on my students' lives. To be successful as a teacher, though, does not require quantity of instruction but rather quality – particularly in curriculum preparation. I believe in evidence-based teaching practices and strive to incorporate as many of these ideas—e.g., active learning, instruction-assessment alignment, and low-stakes testing—into my courses.

Since arriving at Georgia Tech in Fall 2014 I have taught two different undergraduate courses in materials science; both of which I have completely redesigned. In MSE 3002 – a core course for our majors that synthesizes and builds upon many of our foundational courses – I have stripped the course to its fundamental concepts and then broadened their applications to include multiple material classes (metals, ceramics, polymers, and semiconductors). I have also integrated rigorous quantitative homework assessments that further contextualize the subject matter. This curriculum is now used by another junior colleague during the semesters that I don't teach this course. In MSE 2001—a service course taught in ~100 student sections to non-MSE engineers—I have completely flipped the class structure to first introduce materials properties and performance in order to engage and motivate subsequent learning of fundamental material concepts in atomic bonding chemistry, crystallography, and microstructure. I further engage these students with ~50 self-developed (many hands-on for the entire 100 person section), in-class demos that further contextualize key concepts, and I provide students with several mini-projects throughout the semester to further enhance critical thinking, teamwork, and self-learning.

In the following sections, I reflect on (1) the teaching philosophies I've developed for achieving course excellence and (2) how I am trying to push the bounds of self-guided and/or peer-to-peer engineering education "outside-the-classroom".

Core Teaching Philosophies: Student Learning & Fairness

For me, I find that only two core principles are needed to design & execute a successful course. In order of importance they are: (1) maximizing student learning and (2) maintaining fairness for all students. While seemingly simplistic, I often find myself leaning towards choosing (2) over (1) – and then I remind myself again of their rankings. (Try it yourself the next time you have to make a decision on instruction for your course.) From these core principles and my knowledge of evidence-based teaching paradigms I have come to adopt several teaching tools:

Evidence-Based Teaching & Active Learning: I "drank the Kook-Aid" in 2012 after attending a 4-day workshop presented by Prof. Rich Felder, a world-leader in engineering education. The pedagogical data he presented was compelling, and after teaching a single semester at Georgia



Fig. 1: *Approximately 100 students actively learning beyond their desks in Prof. Losego's MSE 2001.*

Tech, I was fully converted: evidenced-based instructional strategies like active learning should not be considered “innovative” but rather just “best practices” for *maximizing student learning* in 21st Century post-secondary education. Ten students, fifty students, or one hundred students, active learning has no bounds on classroom size. I walk in on the first day of class treating periodic active discussion amongst small groups of students as normal practice in the classroom. I don’t know if they do this anywhere else, but in my class it is normal and everyone participates multiple times a class. In the extreme case, I will have 20+ groups of 4-5 students situated around the entire classroom translating various rotational symmetry elements to determine which fill all of space & then evaluating their neighbor’s drawings (Fig. 1).

Cohesive Alignment of Instruction and Assessment: I consider the alignment amongst lectures, assignments, and exams at the core of the pact I make with my students to teach a *fair* course. If what I teach, what I have them practice doing on assignments, and what I finally test them on do not all align, then I am not being fair to the students – and I am probably not maximizing their learning. This requires significant pre-planning but minimizes student confusion and complaints. Central to my approach is the development of a detailed list of learning objectives (usually 3 to 4 pages) for every course I teach. I then simply make sure my lectures cover all of these topics, and when I write assessments, I create them from these learning objectives (which actually makes assignment creation much easier). As an added benefit, I share these learning objectives with the students for each exam as a “study guide”.

Concrete Expectations: A second core tenant of course fairness is rigid “bars” for grades that are established on the first day of class. I despise all forms of curving and extra credit. More effective, I find, is simply adjusting the bars to meet the level of course and assessment difficulty I choose to have for a given course. (For example, some of my courses have B grades that extend to only 80% while in others a B extends to 75%). I then align my assessments accordingly such that 50% of an exam is usually “easy points” while 10% to 15% consists of “challenging” questions that accurately and fairly differentiate between A’s, B’s, C’s, etc. My goal is accurate differentiation of performance – not just with other students who are taking that course *that year*, but rather with *all* students who take that course from me at any point in time. Besides setting clear expectations for students it also reduces any competition amongst classmates (everyone can get an “A”...or an “F”), promoting collaboration on homework and other external assignments.

Contextual Difficulty & “Real World” Problems: Students will often describe my assessments as including “real world” problems that enhance their problem solving or critical thinking skills. What this really means is that I write questions testing my learning objectives in contexts that they have not previously seen. The more dissimilar from prior lectures or assessments the more difficult for the students to contextualize. (And of course, to be *fair*, I do this in my assignments as well as my exams so that they can practice re-contextualizing a concept.) This re-contextualization is my primary tool in scaling assessment difficulty and differentiating student performance. This approach is particularly effective in engineering education because it develops the skill set desired in engineers – the ability to solve open-ended problems.

Low-Stakes Testing: Pedagogical studies have proven that the *best way to learn and retain* a concept is NOT to review it over and over but rather “test” yourself on it. Testing – regardless of whether you get it right or wrong – improves retention far more than reviewing / memorizing. Besides encouraging students to use this technique in their studies, I strive to provide low-stakes assessments throughout my courses. In MSE 3002, I offer quizzes that mimic exam questions but are only scored for attendance, and in MSE 2001 I offer “bucket points” for homework and in-class clicker questions, each of which are worth very little to the overall grade (student must collect ~900 “bucket points” in a semester amongst the 1600+ that I offer to receive full participation, i.e., 15% of their final grade).

Diversity of Instruction & Assessment: Students learn in different ways. To maximize ALL student learning, I strive to deliver content through a variety of teaching tools. Even in my own pedagogical research, I have observed the importance of this diversity. In Fig. 2, I plot the students' responses for "most engaging" and "least engaging" demos presented during a 4-week section of my MSE 2001 course. To me the most fascinating result from this data is the sheer difference in perception of the paperclip yielding and ice composite demos. While approximately 5% of the class found each of these demos the MOST engaging, another 5% each found these same demos the LEAST engaging. This sharp contrast clearly demonstrates how differently various teaching tools can resonate with different students. To minimize dissension, I inform students early in the semester that while they may find a certain teaching tool ineffective for their own learning, it could be the most important teaching tool for one of their classmates.

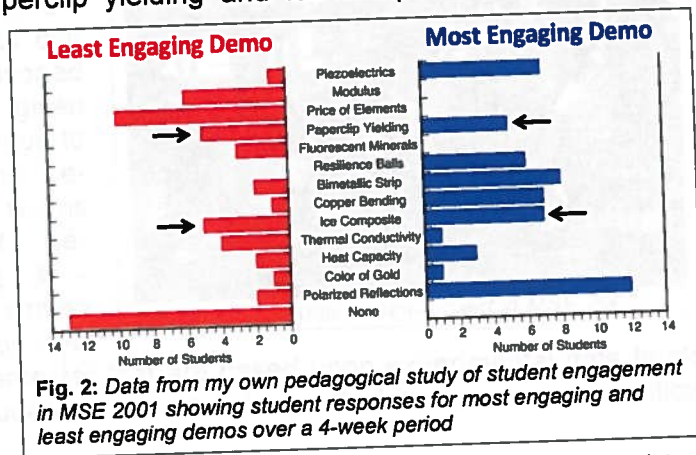


Fig. 2: Data from my own pedagogical study of student engagement in MSE 2001 showing student responses for most engaging and least engaging demos over a 4-week period

Continuing My Education: It took my sister four years of undergraduate education and two years of M.S. study to qualify to teach elementary students. I have no formal teaching education, and yet, as part of my job, I am expected to excel at teaching post-secondary students. I know that I am poorly trained, so I take as many opportunities as possible to educate myself in pedagogical practices. Besides attending Prof. Felder's intensive 4-day workshop in 2012, I have also been a CTL Class of 1969 Teaching Fellow, and regular participant in other CTL workshops. These interactions have inspired me to incorporate new methodologies in my teaching including the use of online class forums (e.g., Piazza) and mid-semester evaluations. I fully believe that spending an extra 5 or 6 hours per semester learning about teaching is critical to my continued growth as an educator.

Educating Others in Pedagogy: I am lucky to advise a number of graduate & undergraduate students who seek to become professors. When these students TA for my courses, I take their learning about pedagogy seriously – I don't see them simply as "graders". To the best of my ability, I try to empower them with opportunities to generate instructional content including mini-projects and structured review-session instruction. While discussing my expectations for this instructional content with the TAs, I also convey my teaching philosophies and rationales so that they too can begin to recognize the importance of evidence-based instructional methods.

Training Engineers Beyond the Classroom & Promoting Life-Long Learning

Through proper preparation of instructional material, I believe a vast majority of learning can be self-directed and assessment automated with little outside-the-classroom input from the instructor while still providing the students with a nurturing and personalized educational experience. This is a bold goal. I push this boundary in MSE 2001. While I have already done the standard automation in homeworks, in-class clicker questions, and scantron exams (maintaining rigor and cohesive alignment), I am now beginning to innovate with summary points / muddiest points synopses via student-produced Piazza discussions, short self-produced videos summarizing challenging concepts, and guided learning projects conducted outside the classroom (and outside the scope of topics covered in the course). Concurrently, I track the effectiveness of these tools through longitudinal, survey-based pedagogical studies that I run

each semester to understand student engagement in this course. If done properly, I believe these efforts can achieve perhaps ABET's most important student outcome: (i) **a recognition of the need for, and an ability to engage in life-long learning.**

I set a similar goal for my students each semester: moving from Learners that simply "receive facts from the instructor" to Learners who look to the instructor as a guide but can form their own evidence-based, self-reasoned perspectives and conclusions about a given subject or discipline. In MSE 2001 I continue to develop open-ended mini-projects like the ice-composite challenge where student teams compete to construct the toughest ice-newspaper composite material (see Fig. 3) – and describe this development in a written report. In MSE 3002 I continue to develop new open-ended homework problems each semester that are based upon experimental data found in the open literature. Enforcing upon students that I don't have all of the answers is a critical step in their progression as a learner.



Fig. 3: Ice-composite mini-project in MSE 2001

The Materials Innovation and Learning Laboratory (The MILL): I believe that open-access labs are the next evolution in self-directed and peer-to-peer learning.

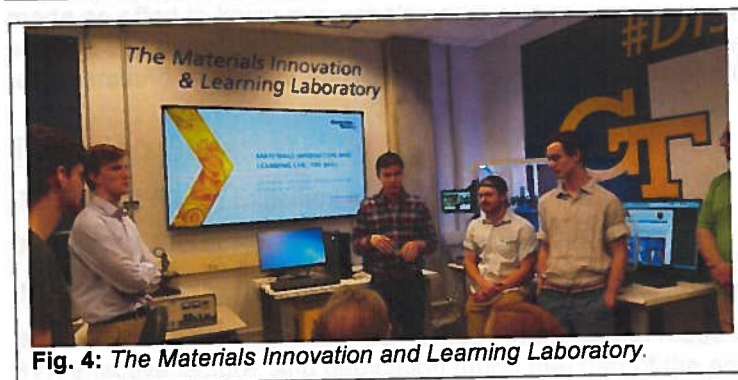


Fig. 4: The Materials Innovation and Learning Laboratory.

Since Fall 2015, I've been fortunate to lead an outstanding team of undergraduate students that have established a new open-access lab on campus: The Materials Innovation and Learning Laboratory or The MILL. (As an aside, I was the one who suggested adding "Learning" to the name.) Unlike other open labs or workspaces, The MILL not only

creates new "widgets" but also focuses on characterizing their chemical and physical structure and measuring their salient performance properties (Fig. 4). This space is intended to be many things including a peer-to-peer learning center. However, as an instructor, I see real opportunity in advancing engineering education. The equipment available in this space enables MSE instructors to take external mini-projects for courses to the next level – accessing sophisticated and expensive tools (e.g., scanning electron microscopes, tensile testers, etc.) that are critically important to our discipline but are rarely accessible to a normal class. Over the next few years I look to expand my own mini-projects in this directions for both core MSE coursework (e.g., MSE 3002) and non-major instruction (e.g., MSE 2001). These mini-projects will also be made fully accessible to any visitors of The MILL as "experiment-in-a-box" self-guided learning opportunities to further promote scientific curiosity and life-long learning.

CIOS Scores: Interpolated Medians

Course	Semester	Total # of Students	Response Rate ¹	Professor Effectiveness
MSE 2001: Principles and Applications of Engineering Materials (mostly non-majors)	Fall 2016	88	57%	4.72
MSE 2001: Principles and Applications of Engineering Materials (mostly non-majors)	Spring 2016	95	45%	4.63
MSE 3002: Structural Transformations in Metals, Ceramics, and Polymers	Fall 2015	32	56%	4.94
MSE 3002: Structural Transformations in Metals, Ceramics, and Polymers	Fall 2014	33	94%	4.59

Besides the CIOS highlights below, Professor Losego has also received "Thank-a-Teacher" letters, joined students for "Take-a-Professor-to-Brunch" events, and accepted an invitation to be recognized at a Georgia Tech Swim Meet. He was also formally inducted into the Professional Textile Engineering Fraternity (Phi Psi), *including being blindfolded*, when he became their faculty advisor in 2015.

Highlights from Anonymous Student Comments in CIOS Evaluations

[MSE 3002 FA14] Thank you, Dr. Losego for being such an enthusiastic and caring teacher. You have been one of the only professors I have had at Tech (I'm a 5th year so that's a lot of teachers) that has made an effort to know everyone's name and seems to want everyone to succeed. Thank you for your support and encouragement and for (attempting) to make a difficult course like this entertaining and easy to understand. You went above and beyond in this class and I really appreciated it.

Teaching Style:

[MSE 3002 FA14] Excellent class, but very difficult.

[MSE 3002 FA14] Homework was like real world.

[MSE 3002 FA15] *[The best aspect of this course was]* taking this hard class with Dr. Losego.

[MSE 3002 FA14] The class took difficult material and made it easier to understand through effective HW, effective lecture, and dedication [upon the] part of the professor.

[MSE 2001 SP16] [Prof. Losego] gave us every resource we could possibly need to succeed. He provided us with lecture slides before lectures and annotated ones after. He gave us homework answers, test answers, & textbook sections. The course was very well organized, particularly for someone who says it's his 1st time teaching it. It was incredible the 1st time around, and I can imagine it'll only get better.

[MSE 2001 SP16] The homeworks and quizzes were extremely relevant. Everything was cohesive. I'm not sure if Losego had to put a lot of work into making the course make sense and fit together, but he did an amazing job at this. He also made class extremely fun with 'Friday treats'. *[I was told by a student in a mid-semester eval that the only thing missing to make it perfect was "Cookie Fridays" – so I obliged.]*

[MSE 2001 SP16] Prof. Losego communicated the subject matter in as clear a way as possible and made the topics (even complicated ones) understandable to those of us who are not from MSE backgrounds.

[MSE 2001 FA16] The demos were awesome! They really solidified the concepts in a real world scenario.

[MSE 3002 FA15] One thing that was cool was that he would give us real world and real research questions during the test that would connect to the materials we learned in class.

¹I am generally against extra credit (because I believe the students should have a bar to reach that never changes), so after my first semester, I stopped offering enticements for classes reaching a certain CIOS participation percentage.

[MSE 3002 FA14] He tried to get us to interact in class whether it be with him or with those sitting around. Instead of just droning through a lecture, he would stop and ask us thought provoking questions and give examples and would summarize it all in the end.

[MSE 2001 FA16] I liked the mixture easy, hard, and difficult questions on the exams that corresponded really well with the homework, Piazza, and in class activities.

[MSE 3002 FA14] This course is the best MSE class I have taken so far. We were taught the material, but also encouraged to apply it not just memorize it.

[MSE 3002 FA14] Dr. Losego is a very caring, entertaining, and knowledgeable lecturer.

Caring for Students:

[MSE 2001 FA16] He never makes you feel stupid for your dumb questions.

[MSE 3002 FA15] Knowing students' names makes me think that Dr. Losego was aware how each individual was doing, not just as names on a paper.

[MSE 3002 FA14] Fantastic teacher who seems to enjoy teaching and wants students to learn and succeed.

[MSE 3002 FA14] Awesome professor. Always available. Will answer anything via e-mail or during office hours. Always willing to have review sessions - really helpful and accessible.

Prof. Losego's Greatest Strength:

[MSE 3002 FA14] The amount he cares for [his] students.

[MSE 3002 FA15] [His] clear and concise teaching style.

[MSE 3002 FA15] Teaching to different types of learners.

[MSE 2001 SP16] [He] makes class exciting.

[MSE 2001 SP16] [He is] very excited about materials.

[MSE 2001 FA16] His ability to be so thorough.

[MSE 2001 FA16] Engaging with students.

[MSE 2001 FA16] [His] strong desire to see students succeed.

[MSE 2001 FA16] Too many to list.

Summary Statements

[MSE 2001 SP16] [Prof. Losego's class] made me [pick up a] minor in MSE.

[MSE 2001 SP16] If I was to pick an ideal teacher Prof. Losego would be it.

[MSE 2001 SP16] You should just fire every other MSE professor because Losego is honestly that good.

[MSE 2001 FA16] One of the best professors I've had at Georgia Tech.

[MSE 3002 FA15] Great teacher. One of the best I've had at Tech.

[MSE 3002 FA14] Best professor I have had to date!

[MSE 2001 FA16] Passionate, informed, respectful, and easy to understand. All in all, Losego is God.

January 25, 2017

Dear Awards Committee Members:

It is my honor to support the nomination of Mark Losego, Assistant Professor, School of Materials Science and Engineering (MSE), for the CTL/BP Junior Faculty Teaching Excellence Award. I have seen Mark teaching students in the classroom, interacting with students outside of the classroom and can think of no one more deserving of this award. Mark has made, and continues to make, a great impact on the students and faculty in the School of Materials Science and Engineering.

I have been a faculty member at Georgia Tech since fall 1992 and am a 1987 graduate. Needless to say, I have seen many faculty members join our faculty and have heard many stories from students about their experiences at Georgia Tech. With my new responsibility as Associate Chair for Undergraduate Programs, I conduct the exit interviews with our graduating undergraduate students. I ask them about their experiences at Georgia Tech and give them a chance to share anything that they would like to about their positive and negative experiences here. This semester many of the students mentioned Mark as one of the greatest faculty members at Georgia Tech (not just in Materials Science & Engineering). They appreciated the true interest that he has in teaching and guiding students to learn (as opposed to lecturing at them). They said that he was able to make the difficult concepts of thermodynamics easy to understand and interesting. They said that he takes time in class for students to discuss things amongst themselves instead of just giving them the answers. They said that he truly cares about the progress towards understanding that happens in his classroom. After these comments, I wanted to see Mark in action. I am always looking for new tools and strategies for my classroom and I wanted to see if I could adapt any of Mark's to my class. Sitting in on Mark's class made me want to take the class. It was a great balance of presenting ideas, asking students for their input and making sure that the point was made before moving on. He used the projection system to go over a difficult derivation, the board to draw plots of the materials that he was talking about and listened carefully to the student's questions. I looked around the class and saw that almost all students were taking notes and paying attention. This was impressive. Mark also drew names from the "lottery" to determine the "winners." What were they winning?, you ask. Three were winning the job of summarizing the learnings from the lecture (the take-a-ways). Three others were winning the job of identifying questions that they still had (or things that were still a bit unclear). This was enabling the students to have some ownership of their own educational learning. It was clear to me that these students took their job seriously. Mark uses Piazza to enable the student to share their summaries and questions. This allows other students to answer

the questions and also enables Mark to interject when needed. I really like this and the students also like it.

I was also able to talk to students who have been involved in his efforts to develop "The MILL." This is a "measure space" that is a bit like a "maker space," but for materials characterization (as well as processing). The idea of making this space came from the students and Mark was with them all the way. It was with his guidance that The MILL is now up and running and has received sponsorship and donations of equipment. We highlighted this space during a recent visit from industry and they too were impressed with the facility. Mark not only sees this as an extracurricular space, but also a space that can support MSE courses. I look forward to seeing his other visions for this space to become real.

In the area of student advisement, Mark, has also improved our process. In MSE, we use a combination of staff advising and faculty advising. After Mark saw the worksheets we were using to help advise students, he developed his own worksheet that he uses with his students. This worksheet not only helps make sure that all of their requirements are met, but more importantly, it tracks discussions concerning their concentration, internship vs. COOP, undergraduate research, study abroad and other educational enhancements. We are currently adapting his worksheet for use by all of our advisors (staff and faculty).

Dr. Mark Losego is deserving of the CTL/BP Junior Faculty Teaching Excellence Award. Please do not hesitate to contact me if you would like to discuss this exceptional faculty member further.

Sincerely,



Mary L. Realff, Ph.D.
MSE Awards Committee
School of Materials Science and Engineering
Georgia Institute of Technology
801 Ferst Drive, NW
Atlanta, GA 30332-0295

To the CETL Awards Committee:

I am honored to write this letter to recommend Dr. Losego for the CTL/BP Junior Faculty Teaching Excellence Award. I had the privilege to have Dr. Losego as the professor for my kinetics class (MSE 3002). His class was one of the best classes I took in my undergraduate program at Georgia Tech. His lectures were always enjoyable and energetic because he always had lots of energy and passion teaching every lecture. The course time was early in the morning, but his enthusiasm during the lecture encouraged me want to attend every single lecture.

The course was one of the hardest courses in the MSE department, but Dr. Losego's teaching style turned it into a fluent and easy to follow course for every student. What I really liked about his teaching style was that his pace during each lecture was great that each student had a chance to pause, think, understand, and digest each concept. He would give us real world problems after each concept, and that could help us to know where each lecture and concept can possibly be used. I believe that is one of the most important thing that Georgia Tech future engineers need to learn.

In addition to lecture notes and real world problems, there was lots of extra practices during the lecture time. Dr. Losego gave students several different handouts and asked them to work on them either individually or in groups. Then he would walk around the class to answer questions or to be involved in discussions to lead each student individually in a right thinking direction. I found this method extremely helpful because he was available to help me digest the concept while the concept was fresh in my brain. Also, this method helped me to be busy thinking during the lecture time instead of just writing down notes from the board.

Homework assignments outside the class were another source of learning. The assignments were definitely great and fair but not easy. It would require lots of thinking process and effort, but after each assignment, I was absolutely confident about the materials. I really enjoyed how each assignment had its own unique design that could help me become a better and a stronger engineer to be able to face different problems and situations in real world.

The other great fact about Dr. Losego was that he was always available for students. I could ask him my questions after class, during his office hours, or during a meeting with him. The other interesting fact was that he would never answer my questions directly and straight forward. Instead, he always asked me more questions trying to teach me alternative ways of thinking when I am solving a problem.

Overall, I totally recommend Dr. Losego to any student for any class because his teaching style is helpful for any engineer. I believe I was absolutely lucky that I got a chance to be his student for one the harder courses in the MSE department. I learned so much taking his class, and I learned how I can think and solve problems as an engineer.

Sincerely,

Aisan Khodaei
January 24, 2017
Materials Science and Engineering
Georgia Institute of Technology
7709103218
Aisan.khodaei2@gmail.com

January 25, 2017

To the CETL Awards Committee:

It is my honor to formally recommend Dr. Mark Losego for the 2017 CTL/BP Junior Faculty Teaching Excellence Award. In his brief tenure at Georgia Tech, Dr. Losego has already won the hearts of students as one of the most interesting and caring professors in the Materials Science & Engineering department. However, I believe it is his influence on students beyond the classroom that demonstrates his true character and love for teaching.

For more than a year, Dr. Losego has played an integral role in the creation and development of the Materials Innovation & Learning Lab (MILL), a brand-new materials science make-and-measure space on campus. In his role as a faculty adviser, Dr. Losego impacts every aspect of the MILL and mentors the students leading the initiative. When I joined the efforts to create the MILL in the spring of 2016, Dr. Losego had already been taking time out of his evenings and weekends to help students clean out the lab, moving large pieces of equipment and dismantling furniture. Dr. Losego was also active in every brainstorming session held for students to imagine what the space could be, constantly challenging us to consider every detail and nuance the MILL may have, from the name and mission of the space to how we would track how many students used each piece of equipment on a daily basis.

In the fall of 2016, I learned firsthand that Dr. Losego's participation in the MILL extended well beyond attending meetings and moving boxes. Throughout the past year, he has worked tirelessly behind the scenes to make our once-thought-to-be moonshot idea a reality through actions such as securing grants for equipment, establishing a constant source of funding for operational needs, and garnering support throughout the MSE department and beyond.

In November, I was watching students give demos and tutorials to peers on how to use our brand-new scanning electron microscope (SEM) with another professor. I mentioned how lucky we were to have a state-of-the-art piece of equipment entirely operated by students in an open learning lab setting. I knew that Dr. Losego had won a proposal for the equipment a few months prior, but to us students, he had made it seem as if one day we needed the SEM, and the next day it was in the MILL. The professor I was with at the time informed me that in reality, the process was far from simple. Dr. Losego was told by peers that his time would be better spent not writing the funding proposal due to a high probability of rejection. Still, he pushed forward and eventually won the grant, proving to faculty and judging panels that he was determined to fight for unique and different student learning experiences outside of our core curriculum.

On behalf of the entire Materials Innovation & Learning Lab leadership team, we are forever grateful for Dr. Losego's belief in us, listening to what we students want out of our time, and far exceeding the expectations of a professor at Georgia Tech.

Sincerely,



Ben Ibach

President | Materials Innovation & Learning Lab
Bibach3@gatech.edu

I would like to provide my strongest support for Dr. Losego's selection as a CTL/BP Junior Faculty Teaching Excellence Awardee. I have worked with and learned from Dr. Losego for ~2 years, and during those years, my relationship with Dr. Losego has varied from student to teaching assistant to undergraduate researcher. My prolonged and diverse interactions with Dr. Losego make me a strong reference for attesting to his exceptional efficacy as a passionate teacher and excellent mentor.

The first experience I had with Dr. Losego was in MSE 3002, phase transformations and kinetics. Dr. Losego immediately struck me as a great teacher because of his ability to effectively orate to the class. Additionally, for complex problems such as spinodal decomposition, Dr. Losego was always able to reduce the technical nature of the phenomenon to an understandable level, and then build back up the realistic complexity. Despite the nebulous technical deep dives in lecture or on homework, Dr. Losego always ensured that we understood why this topic was important and its relevance in real-world. For example, Dr. Losego once brought in cooling mattress pads, explained how they work via phase transformations, and then led us to conclude they are a waste of money because the cooling stops once all the material has transformed. Dr. Losego's kinetics class has been one of my favorites, not necessarily because of the content, but because of the quality of teaching.

After taking Dr. Losego's kinetics course, I was enamored by his teaching efficacy, and I wanted to become a better teacher, so I asked to TA for his Intro to Materials class. Dr. Losego allowed me to TA for his class, and learned how he planned lessons and taught. As a TA, he enabled me to interact with students, to teach, and to write curricula for the students' projects. I learned from watching and doing; he cared about my growth and development. I also saw that Dr. Losego truly cares about his pedagogy. Two or three times that semester, Dr. Losego distributed half-page surveys asking about his teaching style and quality of the content. The following lecture, Dr. Losego shared with the class the survey results and the changes he was making. Dr. Losego is so adept at teaching that he can adapt his style to meet the needs of the class. When I am a professor, I want to be like Dr. Losego.

In addition to being a student and TA for Dr. Losego, he enabled me to be an undergraduate researcher and start my own limited liability company. In spring 2015, a friend's son contracted MRSA while in a hospital, so I wanted to develop another tool to mitigate disease transmission. By fall 2015, I had an idea to help mitigate disease transmission, but I needed a place to develop my chemistry. Because Dr. Losego was such a good and approachable teacher, I asked him if I could develop my solution in his lab. Dr. Losego took me in, provided the space I needed, gave insights when asked, but most importantly gave me the freedom to explore my own ambitions. Throughout this research process, Dr. Losego has made a significant impact on me—making me a better researcher. Dr. Losego always asks for my logic and references for why I think something is possible, and this skill set is beginning to deepen my critical thinking skills for life. Because of his hospitality and optimism, I now have a team of 15 students working on my three projects within the Losego lab space. Unknowingly and inadvertently, by Dr. Losego enabling me to explore my ideas, he has also enabled 14 other students to explore our ideas and become engulfed in the scientific process. Dr. Losego is a game-changer and enables students to reach their fullest potential.

I full heartedly believe Dr. Mark Losego is worthy of this award and has been as transformational of teacher as previous year's winners (if not more). Dr. Losego is a pivotal member in the Materials Engineering and Georgia Tech communities because of his dedication to progressing and serving them. I am a better person because of Dr. Losego's impact on my life, and I will be forever grateful for his teaching efficacy and consistent mentoring.

-Shawn Gregory

I would like to provide my strongest support for Dr. Losego's selection as a CTL/BP Junior Faculty Teaching Excellence Awardee. I have worked with and learned from Dr. Losego for ~2 years, and during those years, my relationship with Dr. Losego has varied from student to teaching assistant to undergraduate researcher. My prolonged and diverse interactions with Dr. Losego make me a strong reference for attesting to his exceptional efficacy as a passionate teacher and excellent mentor.

The first experience I had with Dr. Losego was in MSE 3002, phase transformations and kinetics. Dr. Losego immediately struck me as a great teacher because of his ability to effectively orate to the class. Additionally, for complex problems such as spinodal decomposition, Dr. Losego was always able to reduce the technical nature of the phenomenon to an understandable level, and then build back up the realistic complexity. Despite the nebulous technical deep dives in lecture or on homework, Dr. Losego always ensured that we understood why this topic was important and its relevance in real-world. For example, Dr. Losego once brought in cooling mattress pads, explained how they work via phase transformations, and then led us to conclude they are a waste of money because the cooling stops once all the material has transformed. Dr. Losego's kinetics class has been one of my favorites, not necessarily because of the content, but because of the quality of teaching.

After taking Dr. Losego's kinetics course, I was enamored by his teaching efficacy, and I wanted to become a better teacher, so I asked to TA for his Intro to Materials class. Dr. Losego allowed me to TA for his class, and learned how he planned lessons and taught. As a TA, he enabled me to interact with students, to teach, and to write curricula for the students' projects. I learned from watching and doing; he cared about my growth and development. I also saw that Dr. Losego truly cares about his pedagogy. Two or three times that semester, Dr. Losego distributed half-page surveys asking about his teaching style and quality of the content. The following lecture, Dr. Losego shared with the class the survey results and the changes he was making. Dr. Losego is so adept at teaching that he can adapt his style to meet the needs of the class. When I am a professor, I want to be like Dr. Losego.

In addition to being a student and TA for Dr. Losego, he enabled me to be an undergraduate researcher and start my own limited liability company. In spring 2015, a friend's son contracted MRSA while in a hospital, so I wanted to develop another tool to mitigate disease transmission. By fall 2015, I had an idea to help mitigate disease transmission, but I needed a place to develop my chemistry. Because Dr. Losego was such a good and approachable teacher, I asked him if I could develop my solution in his lab. Dr. Losego took me in, provided the space I needed, gave insights when asked, but most importantly gave me the freedom to explore my own ambitions. Throughout this research process, Dr. Losego has made a significant impact on me—making me a better researcher. Dr. Losego always asks for my logic and references for why I think something is possible, and this skill set is beginning to deepen my critical thinking skills for life. Because of his hospitality and optimism, I now have a team of 15 students working on my three projects within the Losego lab space. Unknowingly and inadvertently, by Dr. Losego enabling me to explore my ideas, he has also enabled 14 other students to explore our ideas and become engulfed in the scientific process. Dr. Losego is a game-changer and enables students to reach their fullest potential.

I full heartedly believe Dr. Mark Losego is worthy of this award and has been as transformational of teacher as previous year's winners (if not more). Dr. Losego is a pivotal member in the Materials Engineering and Georgia Tech communities because of his dedication to progressing and serving them. I am a better person because of Dr. Losego's impact on my life, and I will be forever grateful for his teaching efficacy and consistent mentoring.

-Shawn Gregory

To the CETL awards committee,

Though I verbally recommend excellent professors outside the classroom to friends, I am rarely afforded the unique privilege of writing a formal recommendation to acknowledge professors in thanks for helping me succeed academically. When my friends or family ask me about the most interesting class I have taken, without fail I speak very highly of my MSE 2001 class I took in the spring of 2016. When Dr. Mark D. Losego reached out to me one morning inquiring if I would write a support letter for him, I happily agreed to endorse him. I believe Dr. Losego deserves the upmost recognition for his commendable efforts.

Dr. Losego stands out from his fellow distinguished professors at this Institute not only for his professional knowledge and thorough research experience, but also for his jovial enthusiasm and engagement with undergraduate students like myself. Though I was initially weary that his MSE 2001 course would be out of reach for a computer engineering major like myself and nothing more than an engineering elective requirement checkoff, Dr. Losego took care to make the course relevant to nearly every engineering major. By teaching MSE through his engaging, personally-designed curriculum and using concise explanations, Dr. Losego masterfully made learning about materials accessible, exciting (like when he gave us nitrogen-frozen marshmallows to explain how temperature affected materials properties), and relevant to challenges we might tackle as engineers. Dr. Losego made numerous efforts to aid his students, repeatedly soaring above and beyond expectations set by the Institute and benchmarks set by other professors. Beyond the compelling demos, Dr. Losego's outstanding works included creating cohesive, logical study guides that coherently reviewed material to making supplementary videos to reinforce cumbersome concepts and holding open Q/A sessions (all on his own time).

Dr. Losego embraced hands-on teaching, emphasizing in-class student participation and effective instruction rather than fatiguing, unproductive textbook reading. Exploiting the broad, everyday applications of his profession, Dr. Losego taught his trade through the lens of everyday examples such as how iPods made of anodized aluminum are colored uniformly yet are scratch resistant, or why the frames of certain reading glasses above fictive cooling temperature are nearly impossible to break. Simple demos made by placing wax pieces on metal rods heated uniformly, Dr. Losego made the concept of thermal conductivity more than understandable; he turned a mere materials property on a specification sheet into a firmly understood subject with real-world implications. As Losego progressed through the course, numerous theories and mathematical formulas that described the world of MSE that once seemed far-fetched suddenly became intuitive.

Teaching in a memorable way that engages and excites students is the pinnacle of quality education. I firmly believe Dr. Losego has truly set the standard for superior instruction at this institution. I whole-heartedly believe that anyone who knows Dr. Mark Losego can attest that he deserves the *Junior Faculty Teaching Excellence Award*.

Sincerely,

Joshua N. Crane (jcrane32@gatech.edu)

College of Electrical and Computer Engineering | Georgia Tech
Residential Technology Advisor | Information Technology Group