

CETL/BP Junior Faculty Teaching Excellence Award Nomination

Dong Qin, Associate Professor

School of Materials Science and Engineering

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Naresh Thadhani
Professor and Chair

Materials Science and Engineering
Georgia Institute of Technology
771 Ferst Drive
Atlanta, Georgia 30332-0245
PHONE 404-894-2651
FAX 404-894-9140
Email naresh.thadhani@mse.gatech.edu

Memo to: CETL/BP Junior Faculty Teaching Excellence Award Committee
From: Naresh Thadhani, Professor and Chair, MSE
Date: January 26, 2015
Subject: Nomination of Prof. Dong Qin, for CETL/BP Junior Faculty Teaching Excellence Award

Dear Awards Committee:

I am delighted to nominate Prof. Dong Qin for the CETL/BP Junior Faculty Teaching Excellence Award in recognition of her passion and joy for teaching, and her sustained record of teaching excellence. In my opinion, Prof. Qin exemplifies *the* type of outstanding instructor richly deserving of this high honor of recognition for which the CETL/BP Junior Faculty Teaching Excellence Award has been created.

Academics and Research: Since coming to Georgia Tech in January 2012, Prof. Qin has taught undergraduate and graduate level courses, including a popular nanomaterials course which includes a lab demo component. She has been an excellent teacher, and received teaching effectiveness scores averaging 4.6-4.8, amongst the highest in the school. While being an excellent instructor, Prof. Qin is an active researcher. She has a research group that includes three Ph.D. students, nine undergraduate students several of whom are recipients of various PURA and NNIN scholarships, and three visiting non-degree student research affiliates. Prof. Qin has taken the lead for revising the Nanomaterials certificate program, and is currently collaborating with CoE & CoS faculty in developing a minor in Nanotechnology. In addition, she has managed the NSF supported NUE program which has engaged 12 Georgia Tech undergraduate students involved in research in nanotechnology. Prof. Qin's research on the rationale design, synthesis, mechanistic evaluation, and characterization of nanomaterials has resulted in 50 peer-reviewed publications and the impact of her work is revealed by her high H-index of 25.

Teaching Philosophy and Outreach: Prof. Qin's teaching philosophy involves an interdisciplinary pedagogy that focusses on student *learning, training, and engaging*. She exposes students to a multifaceted and integrated approach to *learning* of fundamentals of materials science and engineering and the impact that materials have on society and the environment. She opens her labs for students to participate in research no matter what stage they are at, so that they receive *training* with state-of-the-art tools. She *engages* students in outreach activities so that they in turn can realize the value and at the same time, promote the importance of science and engineering and its role in serving the needs of society. These traits are what make Prof. Qin, not only a good teacher, but also a valuable mentor. She is proactive in recruiting undergraduate students as well as high school students in her research group, and involving them in meaningful research, resulting in their receiving PURA and other fellowships.

Summary: Prof. Qin demonstrates a passion for teaching and learning, facilitating vibrant discussions, connecting her research and teaching, bringing educational outreach beyond the classroom, and positively contributing to the educational mission at Georgia Tech. It is these principles that make Prof. Dong Qin most deserving of the CETL/BP Junior Faculty Teaching Excellence Award.

Yours Sincerely,

Naresh Thadhani

Naresh Thadhani

REFLECTIVE TEACHING STATEMENT

The mission of education is to develop bold, independent, and creative thinkers who can serve the global society. Institutions should be dedicated to challenging their students and faculty alike to seek new knowledge and greater understanding of an ever-changing, multi-dimensional world. As a faculty member at the Georgia Institute of Technology (GT), Dr. Qin is committed to educating students to be innovative, capable of learning continuously throughout their careers, and able to adapt to changes. Specifically, Dr. Qin is keen to integrate science, engineering, and emerging technology into both undergraduate and graduate curricula to educate students across disciplines effectively. She has been developing an interdisciplinary pedagogy that values the following aspects in the context of materials science and engineering: *i) learning* that exposes students to a multifaceted, integrated approach to understanding the fundamentals and new developments in materials science, as well as its environmental and societal impacts; *ii) training* that offers students research experience in research labs for exploration of state-of-the-art characterization tools and new discoveries in the forefronts of materials science and engineering; and *iii) engaging* that connects the students with community and society to impart and promote a solid understanding of materials science among high school students and teachers. The ultimate goal is to benefit both the scientific and engineering communities by poising the students to interdisciplinary approaches traditionally exclusive to materials scientists, engineers, chemists, physicists, and biologists.

Curriculum Development: Dr. Qin is passionate for teaching students from different disciplines and at all levels. To establish student-focused curricula, she focuses on their understanding and appreciation of materials science and engineering both in bulk and at nanoscale. Since her arrival at GT, Dr. Qin has been teaching at both undergraduate and graduate levels, including two courses with a bold focus on the fundamentals and structure-property relationship for materials at the nanoscale: *Fundamentals of Nanomaterials and Nanostructures* (MSE 4330/CHEM 4803C, Fall 2012, 2013, 2014) and *Advanced Nanomaterials* (MSE 6405/MSE 4803B, Spring 2013, 2014). As the applications of nanomaterials and nanotechnology proliferate, there is an ever increasing demand for scientists and engineers who can think, measure, and process at the nanometer scale. To meet this demand and educate the students of AE, BME, CHEM, ECE, ME, MSE, and PHYS with their own scientific languages, Dr. Qin used a modular design for both courses with topics including the physical and chemical principles of nanoscience; the characterization and fabrication tools for nanomaterials; and case studies about nanomaterials in a broad spectrum of applications. To ensure a better understanding of important concepts discussed in the lectures and to provide hand-on experience, Dr. Qin also implemented one-week-long lab sessions for MSE 4330/CHEM 4803C, during which the students were able to work on the syntheses and characterizations of various types of nanostructures and nanomaterials in the Qin lab and Professor Tsukruk's lab. Such an integrated approach to education that combines lab components with classroom lectures was well received and applauded by all students. In the spring 2015, Dr. Qin is teaching MSE 2001A (*"Principles and Applications of Engineering Materials"*), and the class includes 72 freshmen, sophomores, and junior students from schools of AE, BME, ChBE, EE, ME, and MSE. Dr. Qin is committed to making this fundamental course enjoyable and exciting to all students across disciplines by enriching their fundamental understanding of the structure-property relationship and focusing more on technology-driven applications of advanced materials. By cultivating a living-learning environment for the students, this course will serve as a powerful vehicle to acquire fundamental knowledge and skills of materials science critical to their future career development.

Student Success: As a dedicated teacher, Dr. Qin enjoys her interactions with all the students having different scientific backgrounds, seeking the best approach to engage them to learn different materials

covered in her class. Dr. Qin grades every exam carefully by herself, by which she will be able to achieve a better understanding of the challenges faced by students with different backgrounds. She corrects every single mistake patiently by writing down the correct answer. Dr. Qin encourages the class to participate in after-the-exam survey, from which she collects feedbacks from students on various issues, including the difficulty level of exam, their expectation on the performance (or grade), and their recommendation for improving the effectiveness of teaching. For those students who had performed poorly on the exam, Dr. Qin always sent out emails to schedule individual meetings at office hours or at students' convenience (including weekends) to reiterate class materials, practice homework and exam questions, and encourage them to improve their performance. Dr. Qin truly values and respects all questions from her students through personal conversations and COIS class survey, from which she continuously refines her class syllabi and improves the clarification of her lectures to enrich learning experience for all the students in her class. Since 2012, the enrollment of the undergraduate course MSE 4330/CHEM 4803C increased from 19 to 41 and 33 in academic years of 2013 and 2014, respectively. The graduate course MSE 6405/MSE 4803B has also become popular with an increase of students from 20 to 33 in academic years of 2013 and 2014. Students highly complimented Dr. Qin's passion about teaching and learning. Their original remarks include: "her passion for the subject and continuous encouragement makes the class great" and "she was excited about teaching, which made me excited about learning". As reflected from the COIS survey over years (see Appendix), Dr. Qin continuously improved her performance with the median scores for "The Instructor is an Effective Teacher" being 4.81 and 4.56 for the undergraduate and graduate nanomaterials courses, respectively. It is also worth pointing out that Dr. Qin has been playing her role as a teacher beyond classroom by interacting with some former students who are now undergraduate researchers at GT or graduate students at other institutions, contributing her endless effort to the future success of the students both in their professional career and life.

Undergraduate Research: Dr. Qin is enthusiastic to cultivate an environment for undergraduate students to be engaged in research as soon as they embark on their college education. Since 2012, Dr. Qin has been working with one high school student, three freshmen, and three junior students on a number of research projects related to plasmonic nanomaterials. Specifically, the students have the opportunities to *i)* understand the challenges in shape-controlled synthesis of bimetallic nanocrystals with desired properties; *ii)* develop new methodologies for measuring and controlling the reaction kinetics involved in the seeded synthesis of bimetallic nanocrystals; *iii)* learn state-of-the-art characterization tools for monitoring the size, shape, morphology, and composition of nanocrystals during a synthesis; and *iv)* develop new strategies for tailoring the structure, composition, and properties of nanocrystals, and ultimately realizing their potentials in unique applications. In addition to the assignment of a graduate student as the "mentor" in the lab, Dr. Qin meets with each undergraduate student at least once every week to discuss experimental details, analyze preliminary data, and plan for future studies. As a recognition to their contributions, two GT-MSE undergraduates were included as co-authors of two peer-reviewed publications from the Qin Lab. Jonathan Li, a rising senior student from Duluth High School in Atlanta, worked as an NUE-supported summer internship in the summer of 2012 and he made great contributions to the very first peer-reviewed paper published by the Qin Lab. His original work entitled "*Kinetically controlled synthesis of silver nanoplates and nanodisks via a solvothermal route*" earned him several recognitions, including a semifinalist of the 2013 Intel Science Talent Search (STS) and a semifinalist and regional finalist of the 2012 Siemens Competition. At present, Jonathan is a sophomore at Columbia University with a major in applied mathematics and minor in MSE. Another successful story was demonstrated by Jae. W (Albert) Ahn, a GT senior in MSE, who has spent three semesters with Dr. Qin working on the development of Au-coated Ag nanoplates for flexible electronics since his completion of MSE 4330 in the fall of 2013. Albert is a recipient of the GT-PURA

grant (fall 2014). Most recently, his work was accepted for presentation at the Materials Research Society (MRS) Spring Meeting in San Francisco (April 9th, 2015). Albert is currently applying for graduate schools to consider science and engineering as his career pathway. The skills he has developed in the Qin Lab will make him ready to take any challenges in his professional career upon his graduation from GT in the spring of 2015 .

Education Outreach and Community Service: Dr. Qin serves as a member of the undergraduate committee in MSE. She has been playing an active role in the GT-MSE nanomaterials certificate program. She has also been working with Drs. Sankar Nair and Peter Hesketh at GT to develop a nanotechnology minor program. To this end, she served as a PI of the Nanotechnology for Undergraduate Education (NUE) Program supported by NSF. Through this program, Dr. Qin has been working with the Chamblee Charter High School in Atlanta. In the summer of 2012, Mrs. Karen Porter David, a science teacher from the School, spent six weeks in the Qin Lab to learn about nanoscale science and engineering with a support from the NSF-NUE-RET program. Since then, Dr. Qin has been working with Karen closely to launch an NSF research grant with an education component to develop hands-on materials for advanced physics students and to launch a kitchen chemistry class for science majors at the School. Dr. Qin has also been actively working with Dr. Nancy Healy, the education director of the NSF-supported NNIN at GT, by participating in the REU and RET programs and transforming her research to make a profound impact on these education and outreach programs.

In conclusion, Dr. Qin has an indelible passion for teaching courses at the interfaces of materials science, engineering, and emerging technology to undergraduates across disciplines. She is also committed to undergraduate research – a critical component to enrich learning and to increase the retention of college students in STEM. Working diligently and effectively, Dr. Qin has helped a large number of undergraduate students acquire scientific knowledge, problem solving skill, self-directed learning capability, communication/collaboration ability, and intrinsic motivation for a successful career.

APPENDIX: ICOS SCORE
(FALL 2012, 2013, 2014 AND SPRING 2013, 2014)

INSTRUCTOR EFFECTIVENESS	MSE	MSE	MSE 4330	MSE 6405	MSE 6405
	4330	4330	FALL 2014	SPRING	SPRING
	FALL 2012	FALL 2013		2013	2014
CLARITY	4.1	4.2	4.6	4.2	4.1
COMMUNICATED HOW TO SUCCEED	4.6	4.5	4.7	4.9	4.8
RESPECT FOR STUDENTS	4.6	4.7	4.9	5.0	4.9
ENTHUSIASM	4.9	4.9	5.0	5.0	4.9
STIMULATE INTEREST	4.6	4.5	4.6	4.8	4.6
AVAILABILITY	4.6	4.9	4.8	4.9	4.8
FEEDBACK HELPFULNESS	4.5	4.6	4.8	4.9	4.9
OVERALL EFFECTIVENESS	4.5	4.7	4.9	4.5	4.6



SETH R. MARDER
Regents' Professor & Georgia Power Chair in Energy Efficiency
Co-Director, Georgia Tech Materials Science and Engineering Center

January 22, 2015

RE: Letter of support for Dr. Dong Qin for the CETL/BP Junior Faculty Teaching Excellence Award

To Whom It May Concern:

I am writing in support of **Dong Qin's** nomination for the 2015 CETL/BP Junior Faculty Teaching Excellence Award at Georgia Tech. I have known Dong for four years and believe that her contributions to teaching of concepts in materials science and engineering and beyond have been both seminal and impactful. As soon as you meet Dong, you appreciate her incredibly high level of energy and enthusiasm. She comes from an academic family and for her teaching is not a profession but a way of life. One can see her joy when she discusses teaching. I recently had a chance to observe her lecture for an introductory materials science course and her level of energy and joy is exuded constantly throughout the lecture as she interacts with students, which is self-evident by her teaching evaluations and students' comments as noted below. Thus it is clear that Dong has a passion for teaching, is excellent at it, and this is recognized by students.

Dong has built a viable research and education program in nanoscale science and engineering for both graduate and undergraduate students at Georgia Tech. She has made connections between research and teaching, as demonstrated by her support of undergraduate research in her lab and through her classroom lectures on research specific topics. She has been successful in creating an exciting environment for undergraduate students to be engaged in both research and classroom learning. In particular, she has created a hands-on demonstration component and undergraduate research component for the nanomaterials course (MSE 4330). For this reason she receives extremely high marks in regards to her teaching evaluations, as evident by her median scores for "The instructor is an Effective Teacher" being 4.76 and 4.56 for MSE 4330/CHEM 4803C and MSE6405/CHEM 4803B. Her ability to address and reach all students, even those who were not performing well in the class, is apparent by her teaching scores and student comments. She stimulates interests in learning and helps students to develop their attitudes to work hard. I have excerpted a few of such comments from her teaching evaluations:

"I very much enjoyed this class and found that the topics which were covered were very interesting and without question relevant to today's ongoing research in nanotechnology. I was also very impressed with Dr. Qin's enthusiasm for teaching and her drive to engage with her students in and out of class."

"I really enjoyed that we were looking at research that was on the cutting edge."

"Lectures were engaging and genuinely informative. The class was about learning, not about performing well on exams."

"The instructor clearly stated what was expected from the student. She is very fair with grading and continually encourages students."

"I thought the breadth of topics covered in this course was helpful and allowed students from a variety of backgrounds to engage with the material."

"Her passion for the subject and continuous encouragement makes the class great. All of the lectures are extremely organized, clear, and easy to understand. Also, she is always available for extra help and clarification for any confusion a student may have."

"One of the best professors I've had at tech! She was so helpful and I was never afraid to go to her office hours. I loved learning and studying for this class even though I thought it was going to be a challenge at the beginning of the semester and doubted myself for a bit. But she made me want to put a lot of effort into this class. I thoroughly enjoyed this class and would definitely recommend it to anyone! Thank you so much!!"

"She was excited about teaching, which made me excited about learning. She always had a great attitude and could keep me alert even from 4:30-6 at night."



SETH R. MARDER
Regents' Professor & Georgia Power Chair in Energy Efficiency
Co-Director, Georgia Tech Materials Science and Engineering Center

Dong's participation in a Research Experience for Teachers (RET) program through Dr. Nancy Healy with NNIN at IEN is a demonstration of her commitment to creating learning opportunities beyond the classroom and laboratory. In regards to Dong's service to Georgia Tech, she contributes best in her role as an effective teacher and mentor. She has been working with Drs. Sankar Nair and Peter Hesketh at Georgia Tech to develop a nanotechnology minor program, and serves as a member of the Undergraduate and Seminar Committees in MSE.

In summary, Dong has represented every aspect of the criteria for this award – she has made great strides in terms of educational innovation, has had positive impact on her students' lives, demonstrates a passion for and excellence in teaching and learning, connects her research and teaching, brings educational outreach beyond the classroom, considers students' needs and has positively contributed to the Georgia Tech community. Accordingly, I very strongly support recognizing her many important contributions by awarding Dong Qin the 2015 CETL/BP Junior Faculty Teaching Excellence Award.

Sincerely,

A handwritten signature in black ink that reads "Seth Marder".

Seth Marder

January 14th 2015

To Whom It May Concern

I am writing this letter in support of Dr. Qin's nomination for the CETL/BP Junior Faculty Teaching Excellence Award.

I am a third year Materials Science and Engineering major, and had the privilege to be in Dr Qin's Fundamentals of Nanomaterials and Nanostructures class (MSE 4330) in Fall 2014. This class was very well structured and thorough, and Dr. Qin's careful planning made her love for the subject obvious. Dr. Qin was genuinely concerned about making sure what we learnt in class stuck, and chose to let us apply our newly acquired knowledge of Nanomaterials in writing a final paper and giving a presentation instead of giving us a final exam.

There are many qualities, in my opinion, that make Dr Qin an exceptional teacher. One of the main reasons I consider Dr. Qin a great teacher is because of her availability and approachability outside of class and office hours. As a third year taking a 4000-level major specific class, which mostly consisted of seniors and graduate students, I was apprehensive about my success in this course. But Dr Qin was always there to answer my questions and work with me. In fact, she made time for me outside of her office hours every week for the entire semester. Dr Qin took a personal interest in my progress, and that motivated me to do better. Her philosophy of looking at individual progress instead of comparing your progress with the class' made me genuinely interested in the subject. Knowing that I was competing with myself made me want to learn more not to get a good grade, but to enhance my knowledge of the subject.

Another great quality is Dr Qin's ability to facilitate vibrant discussion in the classroom. Her slides were mostly filled with interesting pictures supplementing her lectures, which were often scans from her own research. She frequently asked students to share their own experiences from research they were involved in that may be relevant to the topic being discussed. Dr. Qin always gave us real world examples (where applicable), like how to characterize DNA, how quantum dots can be used to localize drug action etc. This helped put things in perspective and made us aware of the areas of research in the field of Nanomaterials that need to be addressed. The final paper gave us an opportunity to further learn about a concept that interested us most.


Dr Qin is not only an accomplished individual, she is a wonderful person. She is warm, friendly, and genuinely loves what she does. I sincerely believe the MSE department at Georgia Tech is better with her in it. I wholeheartedly support Dr. Qin's recommendation for the CETL/BP Junior Faculty Teaching Excellence Award.



Anshika Kashyap
Materials Science and Engineering
Georgia Institute of Technology
(917) 705 8108
akashyap31@gatech.edu

To: Ms. Shirley Manchester, MSE Dept.

From: Christopher Carron, GRA in ECE Dept.



When I was asked to write this letter of support for Dr. Dong Qin, it gave me pause to reflect back on the many teachers I've come into contact with over the years, from kindergarten to graduate school. As I've thought back, there are about ten teachers I've had who have left a significant impact on my life -- Dr. Qin is among these ten.

Since I've met Dr. Qin, she has always (I mean this literally!) made herself available to answer my questions, both inside and outside of class. In class I can't recall a single instance where she brushed over a student's question in the name of 'getting on with the lecture.' She made sure that questions were answered on the spot, or would follow up with a class-wide email afterward if the question required more study. This didn't interrupt the flow of her lectures -- she seemed to prepare her lectures anticipating a few questions -- and encouraged a friendly culture of group learning that was very enjoyable and productive. I've rarely seen this achieved by other teachers. When I asked her questions by email, she would often surprise me with how quickly she responded. Even after completing her class, I would occasionally run into her on campus and she seemed to sincerely care about how I was doing (e.g. how was my research progressing, how were my other classes, how was my family) and would take time to answer any questions I had been thinking about. Often, she was in a hurry to get somewhere but she still took the time and we would talk on the way. This really impressed me. It was also difficult to keep up because she walks very quickly -- in fact, she seems to be overflowing with a cheerful, encouraging energy that is both contagious and inspiring.

Although my research is relatively unrelated to the class material, the friendly culture Dr. Qin nurtured in class had at least two unexpected and very significant impacts on my personal research. The first came about as a result of a classmate giving a presentation on his individual research (she encouraged us to present and discuss our research and relate it to what we were studying in class). He described how he used a shadow mask technique to spray coat patterns onto his electronic devices. I suddenly realized that I could do the same thing and it would solve a major obstacle in my own research! I tried it out and it worked beautifully, resulting in several publications and dramatically improving the turn-around time for testing my devices. A second instance of her class having an impact on my personal research involved the term paper she asked each student to write. I chose to study Atomic Force Microscopy (AFM) and was surprised to find myself enjoying this term paper more than usual. I even watched an entire course about AFM online, and found myself learning for the pure joy of learning (this is usually NOT the case with term papers, in my experience). I wrote the paper and turned it in and went my way. Very recently, however, my research has required a new method for measuring my devices. I had been scratching my head over how to do this, when I realized that I could use a circuit technique I learned about while researching the AFM paper. I am in the process of implementing this new technique into my research, and I am very glad that the culture in Dr. Qin's class encouraged me to dig a little deeper into my term paper than I otherwise would have.

There are many other positive things I could say regarding Dr. Qin as an educator, but a page is too short. In the end, Dr. Qin is a credit to Georgia Tech and an asset to the educational mission of this campus. I have witnessed that she legitimately and sincerely cares for her students, for their learning and for their well-being, both present and future. She is always cheerful and a joy to be around, and has a boundless energy I wish I had. Her personal qualities enrich her classroom, and enhance the learning experience. The culture she created and fostered in her class helped rekindle the childlike curiosity and love of learning I felt so strongly when I was younger, and I am better for having known her.

Jonathan Rong Li
4589 Lerner Hall, 2920 Broadway
New York, NY 10027
jrl2177@columbia.edu

To whom it may concern,

I am currently a sophomore undergraduate student at Columbia University in the City of New York, and I worked closely with Dr. Dong Qin as a member of her research group in the summers of 2012 (as a high school student supported under a grant from the NSF Nanotechnology Undergraduate Education (NUE) program) and 2014. I am writing this letter not only to strongly recommend Dr. Dong Qin for the CETL/BP Junior Faculty Teaching Excellence Award, but also as a show of my genuine gratitude for the way in which she has shaped my career as a student and a scientist.

When I first joined the Qin Lab as a rising senior in high school, I lacked the engineering fundamentals necessary to make any significant contributions to the group's research. I thought to myself, "if undergraduates rarely have a meaningful role in their PI's research or even have the chance to perform hands-on scientific research in the first place, then, as a high school student, I shouldn't expect to be very included or involved with the group's activities."

Luckily for me, I was completely proved wrong. Although I was young and clueless, Dr. Qin helped me find a niche for myself within the environment of her group. The fact that, despite my lack of fundamental knowledge and skills, she decided to bet on my ability to succeed by closely guiding the development of my research abilities and allowing me to pursue an independent research project is something that I'm eternally grateful for. This characteristic that Dr. Qin possesses and which is so evident in her teaching and mentoring -- an ardent dedication to *all* of her students, regardless of academic level -- is something that truly sets her apart from the other professors I've had the opportunity to work with, both at Georgia Tech and Columbia.

More specific to Dr. Qin's teaching style, which I've witnessed firsthand in group meetings, I've found that qualities of both passion for outreach and commitment to each and every one of her students are highly evident even when she's simply at the board explaining a concept. Aside from being an enthusiastic and buoyant lecturer, she truly likes to get everyone involved and fuel a classroom discussion, a refreshing approach compared to the one-directional way that many other instructors teach. One of the most important things that I've learned from Dr. Qin is that you don't truly understand something unless you can explain it to any given person, including someone without scientific training, and I can see Dr. Qin's fervent dedication to this goal of "complete understanding" in her teaching, from her amusing analogies (linking cooking a delicious steak to the synthesis of a batch of nanoparticle solution, for example) to her constant reminders of the big picture -- why nanotechnology is important and how our research will be used towards applications in optics, catalysis, medicine, etc.

All in all, Dr. Qin's mentorship has been vital to my growth as a student and a researcher; indeed, my experience as a member of her research group kindled in me a genuine desire to understand how the world around me works and allowed me to transform from a high school student with no knowledge of the mechanisms of nanoscience to a scientist with a more profound understanding of the field, an understanding that grows everyday thanks to the lessons I've learned while working with Dr. Qin.

Sincerely,


Jonathan Rong Li

To whom it may concern:

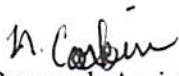
I am happy to recommend Dr. Qin for the CETL/BP Junior Faculty Teaching Excellence Award. I am currently a third year chemical engineering major at Georgia Tech, and I took Dr. Qin's class on nanotechnology in the fall of 2014. I have firsthand experience in her classroom and can attest to her teaching skills. Dr. Qin is a knowledgeable, passionate, understanding, and simply outstanding instructor. After taking her class, I am seriously considering research within the field of nanotechnology.

Dr. Qin utilized several methods to make learning more interesting and impactful. One was the inclusion of lab demonstrations to enhance our understanding of the course material. These demonstrations covered experiments and concepts that she had discussed in class, but seeing them in the lab made it easier to see how all the concepts are connected and used in research. She cogently explained in terms of the class concepts what was happening in the demonstrations and why they were important. Her inclusion of these lab demonstrations was a creative way to give students a hands-on experience in a lecture-based course.

Another aspect of Dr. Qin's teaching that I enjoyed was giving us the chance to present and write a paper on a hot topic in nanotechnology. I was able to pick an area that I was interested in and see how the basic concepts covered in classes could be applied to solve a real-world problem. This assignment made me think critically about all the material we had covered throughout the semester and how it could be synthesized to create a beneficial technology. The project also gave me a glimpse of what the challenges are in nanotechnology today and how current research is aiming to tackle them. Dr. Qin was supportive throughout the project and readily responded to all of my emails. This project was the most educational and enjoyable project I have worked on in my three years at Georgia Tech.

Being the only chemical engineering student in a materials science class could have been a significant disadvantage, but Dr. Qin never made me feel lost or behind. She was eager to answer any of my questions and gladly reviewed confusing concepts during our meetings.

Dr. Qin's concern for every student and creative instruction style make Dr. Qin one of the best instructors I have had at Georgia Tech. I highly recommend her for the reception of the CETL/BP Junior Faculty Teaching Excellence Award.

Nathan Corbin 
Undergraduate Research Assistant
Vice President of Omega Chi Epsilon
School of Chemical and Biomolecular Engineering Georgia Institute of Technology
ncorbin3@gatech.edu

To the CETL Honors Committee:

Hello, my name is Zev Greenberg and I had the fortune to be a student of Dr. Dong Qin in the semester of Fall 2014 for her Introduction to Nanomaterials class.

You know those professors that usually spend their lectures simply talking to a class of students? Thankfully, Dr. Qin was most definitely NOT one of those people. Her method of teaching was a very fresh change of pace compared to many classes I have had here at Georgia Tech. Instead of lecturing her students, Dr. Qin would engage us when she taught. Let me give an example: many times during the semester there would be cases where the material being taught would be pretty abstract, such as the interaction between atoms at various energy states. In this particular instance, the topic was how atoms tend to condense together and lower energy to form certain surfaces. Everybody was having problems with understanding how you could have nanoparticles grow to become squares by having the surfaces you want to grow blocked by certain ligands that only bind to those surfaces. "You block the surface in order to make it grow?!" we all kept wondering, "How does that work?" She pondered a bit and then came up with an idea, "O.K., so imagine the first row is a layer of atoms, with your left arm you reach to your neighbor at the left and your right arm you reach in front of you to grab onto another student as if they were an atom. This means that a free right hand is like surface [100], and a free left hand is like surface [111]. If I were to come along and put, say, an orange in all of your right hands, you would only be able to form 'bonds' with your left hand. If all of the left hands are all used up to form a nanoparticle and we 'wash' the oranges out of your hands like we would a blocking ligand: which hand or 'surface' would you have exposed?"

"The right one," somebody chimes.

"Correct! So replace 'right' with [100] and it's a similar situation! The bonds to [111] don't add to the [111] surface, they cover it up and the [100] remains!"

After this explanation, there was a symphony of, "Oooohhh!" going around as the concept finally clicked into the class's heads, and that was what was important to Dr. Qin when we were in her class: concepts. She made sure that when she asked questions, it wasn't something that would be just rote memorization. In a few cases she asked questions that we were not asked directly in class, but they were all answerable if you broke down the question and used the key concepts that we were taught. This applied to both the fundamental and application parts of the material such as when trying to get us to understand that the electron and hole radii are proportions of each other, or when she would ask what fabrication method you would use to make certain nanostructures. Instead of trying to make us think like students, she tried to make us think like scientists and engineers.

Sometimes when she was asking us questions, however, there would be a little confusion amongst us about what exactly she was asking. There were cases where we responded to the question in a way we thought answered it, but turned out that wasn't what she was looking for.

A few of us attributed these hiccups to language barrier, but considering that these are concepts that people have a hard time explaining to people even when English was their first language I think she did an excellent job.

In conclusion, Dr. Qin did an excellent job in not only educating about a hot and still very new topic that is still being explored, but in also sparking interest in it. I feel that what I have learned from her class will help me in not only in my continued progress as a Georgia Tech student and researcher, but also as I strive to be a “helluva engineer!”

Sincerely,

A handwritten signature in black ink, appearing to read "Zev".

Zev Greenberg

Materials Science & Engineering

Jan 2nd, 2015

Dear CETL/BP Junior Faculty Teaching Excellence Award Committee,

I wish to nominate Dr. Dong Qin who is highly eligible for CETL/BP Junior Faculty Teaching Excellence Award. Dr. Qin exceeds the criteria for this award and has shown exceptional skills in teaching. I took Dr. Qin's course on *Fundamentals of Nanomaterials and Nanostructures* in Fall 2013 and has known her for more than a year. Her dedication, hard work and unique teaching style have impressed me a lot and I heard my classmates feeling the same way. Dr. Qin is very approachable and willing to help us make progress. She not only taught us technical knowledge centered on the course topic, but she also gave us the opportunity to practice our soft skills through peer presentation and scientific writing. Dr. Qin has offered us more than what was required to earn an A in her class. The textbook she chose *No Small Matter: Science on the Nanoscale* has inspired a novel way to appreciate scientific writing-the combination of science and art.

Besides being an effective and excellent course instructor, Dr. Qin is one of the committee members of my thesis for research option and thus we have had more interactions than regular course-based ones. She provided me with helpful and enlightening suggestions on both scientific writing and research, where I got the chance to apply what I have learned in her course. In addition to passing on knowledge through course and research, Dr. Qin gave me plenty of advice on how to excel in graduate school. Her encouraging words have served as the lighthouse throughout my first semester there and would benefit my future career in the long run.

Dr. Qin herself is also an artist. She contributed to the cover design of the Chinese version of *No Small Matter* and has imparted to me her artistic skills that also enhance the writing. Dr. Qin helped redesign the flowchart in my thesis and gave enthusiastic comments on my poster for the UROP Symposium, which made me eager to make greater improvements. She pays much attention to details such as the position to place the legends of a figure as well as the consistency in the scale bar of the TEM images. Moreover, Dr. Qin emphasizes the importance of keeping an open mind and raises my awareness of discovering beauty in research. Beyond routine work in the lab, putting together the work in an artistic manner makes it even more rewarding. It is Dr. Qin who has enabled me to look at research from a higher ground.

To sum up, Dr. Qin is an individual with glamour and wisdom who has combined science and art in her teaching, thereby fully displaying the essence of education. I believe she deserves this award and I strongly recommend her to be one of the recipients. If you have any questions, feel free to contact me at xueying@mit.edu.

Sincerely,

Xueying Zhao

Xueying Zhao
PhD student
Department of Materials Science and Engineering
Massachusetts Institute of Technology
Room 8-137, 77 Massachusetts Avenue
Cambridge, MA 02139-4307

January 11th, 2015

To Whom It May Concern,

I am writing this in support of Professor Dong Qin for the CETL/BP Junior Faculty Teaching Excellence Award. I am a 4th year undergraduate student in the School of Materials Science and Engineering, and I have worked under Professor Qin for almost two years.

I had the pleasure of learning from Professor Qin on the Fundamentals of Nanomaterials and Nanostructures (MSE 4330) in the fall semester of 2013. The course is left to me as a great memory for a number of reasons. For one, I could tell that she was deeply interested and enthusiastic about the subject matter as she was always excited to come to class and teach. Also, she always made an effort to present the material with connections to real-life examples from her own research group, making it easier for the students to attain a greater level of understanding of the material. Lastly, she utilized in-class discussions to proactively assess our progress on learning the material and always made sure that students were keeping up with the course well.

One aspect of Professor Qin that I want to highlight is her continuous efforts to better the quality of education that is delivered to the students. She often asks her students for feedback and readily accepts their suggestions with discernment. Although she has been in academia for a long time and has taught many courses, she does not take each new semester of education lightly and strives to make sure her next set of students are better educated than before. I can recall a time when she sat down with me to discuss teaching strategies for MSE 2001: I was able to offer her the student's point-of-view on the various avenues she was planning on to use to help the students learn the material more effectively.

Another commendable facet of Professor Qin is her generous support for her students and researchers. I have had the privilege to work in her lab, and was able to see that she never held back in communicating, advising, and assisting her students (including myself). She not only identifies the various opportunities and paths that her students can take in their endeavors to pursue their careers, but also spends time and effort to logistically support them as well. As a personal example, I have received a great deal of advice in my pursuit for graduate studies as well as a recommendation letter which she spent countless hours drafting.

Professor Qin is a great teacher and a supportive mentor. Her dedication to better education and investment in people is highly commendable. She is well deserving of the award, and I hope that this letter of support does justice in explicating that.

Sincerely,

Jae Wan Ahn

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Georgia Institute of Technology

School of Materials Science and Engineering

Undergraduate Student

jahn43@gatech.edu