Although I have had American citizenship since birth from my mother, I spent the majority of my life growing up where I was born, in Cape Town, South Africa. My parents realized early on that I was very academically oriented and, despite low incomes, put in tremendous effort to get the best educations for my brother and me. Like most natural engineers, I have habitually sought out opportunities to learn more and gain deeper insight into various areas of technical knowledge, rather than just diligently and obediently working my way through school. I learned to be appreciative of how fortunate my situation is compared to many of my friends who had a much rougher time in school because of disruptions from home or because their families did not recognize the importance of education. Many of them could have done much more had they been given an equal opportunity and education. I combined this humbling perspective with my affinity for deep-level thinking and understanding to create a powerful drive to keep myself working hard and to not take for granted how lucky I was. It instilled in me a reverence for the value and importance of education. Now, a decade after our family moved to America, I am still on track for the goal that I set forth in middle school of becoming a professor to teach, do research, and give back to society.

I have worked hard to get into my first choice of mechanical engineering PhD program. During high school at Choate Rosemary Hall, I engaged in community service work and joined SRP (the science research program), which only admitted 8 students per year. Thus, in addition to my regular workload, I spent a year and a half (including the summer between), working either at a research lab at Yale or on my own designed experiment in school, culminating in a formal presentation of my work and a mimic dissertation. Beyond academics, I also rock climbed and was an active member on the archery team, winning two competitions and being unanimously elected as Men's Team Captain my senior year.

I learned with time that I am equally passionate about fundamentally understanding how the universe works, and about applying this knowledge to solve hands-on engineering problems. Therefore, during my four years at Carnegie Mellon University, I acquired BS degrees both in Applied Physics and in Mechanical Engineering (with a minor in philosophy) specifically as a way to build a broad and robust foundation for doing work that combines fundamentals with applications.

My sophomore year at Carnegie Mellon University, I was a TAA (teaching assistant assistant) for two semesters in the Physics Department, and my junior year I was a UTF (undergraduate teaching fellow) for two semesters in the Mechanical Engineering Department. Both of these honored positions are acquired through a combination of faculty and peer recommendations. I was able to use my natural communication skills and ability to clearly verbalize otherwise complicated concepts in an intuitive way to effectively tutor students. It was exciting to witness the moment when a student suddenly made sense of a difficult concept, and it was rewarding to help give to others as inspiring an education as the one I received. I eagerly look forward to making teaching a more permanent part of my future life, first as a TA, and ultimately as a professor.

My senior year I did research with Professor C. Fred Higgs III in the Mechanical Engineering Department. Although his Particle Flow & Tribology Lab does not deal with phonons, fields, and quantum mechanics (as I am more inclined toward nanoscale physics), I still found myself

getting drawn in to my work and becoming absorbed in the papers I read to bring myself up to speed. This confirmed my love of and aptitude for research.

While pursuing science and engineering during the day I was also rowing on the Carnegie Mellon University crew team in the mornings. I woke up every weekday at 4:30am (as well as 7:00am on Saturdays) to go to practice. In addition, we were expected to do afternoon workouts on our own, as well as dedicate up to 12 hours during weekends to fund-raise money for the club. Suffice it to say, rowing was a large time commitment. As a result, I learned excellent time management skills. I rowed in the top boat all four years, earning several intercollegiate first-place victories and some of my best memories from college. I did this because I enjoy maintaining a balanced life and working on teams with other hard working and driven people. My senior year I was again unanimously elected Men's Team Captain.

I spent two of my summers interning at Apple Inc. in Cupertino, gaining perspective on the world of industry, which helped me to make a fully informed decision when choosing to go to graduate school with the intent of committing my life to academia. I acquired valuable experience seeing how to apply the theory that I learned in the classroom to designing real life technologies. In April of 2011, when the Senior Vice President of Hardware at Apple called me to try to convince me to accept their full time job offer instead of going to graduate school, he pointed out that he has only ever known two other interns who had as proficient communication skills and had contributed as much during their internships as I did, and that both of them became program directors within two years of starting work at Apple. While I enjoyed working at Apple, I realized that it would not provide sufficient long-term intellectual stimulation, or the opportunity to teach and fill a classroom with my knowledge. Again I felt myself being guided toward academia.

At graduation from Carnegie Mellon, I was a co-winner of the Forstall Award for Excellence in Mechanical Engineering (a departmental award given out once a year to the class' most outstanding and accomplished graduating mechanical engineer). I was never trying to impress anyone, I was only responding to my innate curiosity and passion toward engineering and the sciences, and a deeper sense of moral duty to use my talents to serve society by making the most of my opportunities. I am where I am now, pursuing a PhD in nanoscale heat transfer and energy conversion at the University of California, Berkeley, because it has been my goal since I was 11 to become a faculty member at a university where I will be able to carry out important and meaningful research while also teaching and helping to raise up the next generation of scientists and engineers. Mechanical engineering to me is a way to utilize a fundamental understanding of how nature works and apply it to creating technologies to serve society and the planet, as well as to research new phenomena in greater depth and acquire and verify new knowledge. I walk the line between physics and engineering and draw upon my strengths and background in both.

I have carried with me a humility and appreciation for education, and wish to dedicate my life to teaching others, discovering and spreading new knowledge, and creating and improving technologies that will have a lasting and positive impact on society. Receiving an NSF fellowship will allow me to focus on these goals without distraction, and to fulfill my potential.