

BEST PRACTICES FOR WRITING A STRONG SCHOLARSHIP REFERENCE LETTER

The importance of writing strong scholarship reference letters for students cannot be underestimated. Students whose scholarship application packages lack persuasive and informative reference letters will be less likely to be granted funding. Good students can lose out on important opportunities; the Faculty loses too when few students are awarded prestigious grants.

Best practices for strong letters of recommendation:

- ❖ Understand the focus of the granting agency. In addition to grades, do they place weight on specific areas for example leadership skills? Be sure to address these special topics.
- ❖ Regardless of the granting agency focus, present the whole student: address academic performance as well as extracurricular activities and student professional competencies such as communication skills.
- ❖ Provide detail. Use specific examples; provide detailed evidence to support your case. The evidence makes the letter much more credible and compelling, and shows that you know the student well enough to make a persuasive and highly believable recommendation.
- ❖ Be prepared to write 2-3 pages, depending on the granting agency requirements; a letter which is comprehensive and which includes sufficient detail is likely to be two pages.

NSERC, for example, seeks detailed information on the following in letters of recommendation:

- 1. What is the student's potential?** How can you tell? What can you foresee, based on your knowledge of the student? What examples can you use to support your answer?
Are the students in the early stage of research or further along?
- 2. Describe the student's accomplishments in research.** Details will be helpful to allow the reader to further assess the student's potential; details will also differentiate among students.
- 3. Highlight the student's leadership and communication skills.** **What have they done in these areas?** Provide detailed examples. You may need to ask the student; it's also useful to ask the student for a resume to help fill in the blanks. Indicate if you have witnessed student performance in these areas: has the student performed particularly well in delivering a presentation? Has the student been a strong team leader in projects? Has the student taken on exceptional responsibilities in teaching or lab supervision?
- 4. Provide a description of the student's writing and presentation skills.** Use detailed examples to show student strength in these areas; tell a story that will differentiate this student from others.
- 5. Demonstrate the value of the student's research.** Provide specific examples and detailed evidence that address both the value of the research itself, as well as the value of the student as someone who can very successfully carry out the research.

It is strongly recommended that faculty and students meet prior to writing the letter in order to review the importance of the letter as well as provide students an opportunity to provide additional information that can support their application, and about which the supervisor may not be aware. The more informative the letter, the better the chance that the application will be successful.

For examples of successful letters of recommendation, please see the attached letters. Letters are used with the permission of both the supervisor and the student.

These letters are good examples of best practices in that they:

- ❖ Provide detailed information, as well as use specific examples as illustrations;
- ❖ Demonstrate extensive personal knowledge of the student, and are thus highly credible;
- ❖ Present the student in a very positive, yet realistic and believable way;
- ❖ Provide substantive evidence which directly and clearly addresses the evaluation criteria for the funding award.

For more information about Scholarships and Fellowships, kindly please reference the following web link, http://www.nserc-crsng.gc.ca/Students-Etudiants/Videos-Videos/SFTips_eng.asp.

Academic Assessment

Jake's academic excellence is the easiest to brag about since he is essentially the highest you can get by quantifiable means. He received an A+ in a whopping 54 courses throughout his student career at McMaster (including every one of his graduate courses), which I understand to be a record for our department, at least in recent memory. He has received key awards such as the Provost's Honour Medal and the Governor General Academic Medal of Distinction, both of which are very difficult to obtain. He received a McMaster Honour Award every year of his undergraduate education. He held the NSERC CGS-M (Canadian Graduate Scholarship at the Master's Level) as a MaSC student and currently holds an Ontario Graduation Scholarship at the PhD level. Over and over again, Jake has been recognized for his academic abilities at the university, provincial, and federal levels.

Despite all of this, when I first made him an offer to join my research group, I never actually knew his grades or saw his list of awards. I did not need to: it only took me one or two conversations with him to immediately recognize his brilliance. He can wrap his mind around any concept, break it apart into its fundamental pieces, and then put it back together again into something new and interesting. He asks all the right questions, and does so in a way that lets you know that he understands what you have just told him and wants to build on that understanding. He has the ability and drive to tackle any chemical engineering problem, no matter how challenging. And perhaps more revealing, Jake has the ability to communicate his ideas in a way that everyone else can understand which requires a mastery of the knowledge. Jake is outlier and is without question one of the top chemical engineering students in Canada (if not the very best).

Research Potential

As Jake's thesis supervisor, I can attest to his research potential and his already proven successes. Perhaps his potential is best explained by the amount I am willing to invest in him. Jake's MaSC project was to examine a certain design concept for a fuel cell system with integrated CO₂ capture and energy storage features. Before Jake began his project, no one had proposed such a system before or knew if it would work. However, within only two years Jake was able to design, simulate, and analyze the system down to a very detailed level. His progress was so rapid that we soon realized that it was time to build it (at the lab scale) and try it out. To do this, I am providing him control over my \$50k lab startup package, plus another \$150k in potential funding via various grant proposals for his project. Quite frankly, I would not have this same confidence with any other student.

Jake recently published his 1st first-author paper in *J Power Sources* (5-year impact factor of 5.000) based on the results of his MaSC research. Two more of his first-author manuscripts based on this work are in the second stage of review after having received "accept with revision" notes from the editors. This is an incredible three first-author papers in 1.5 years as a MaSC student, which is more than any other student in my group and three times the department average for MaSC students of 1.0 first-author papers per two years. In addition, he has published two more second-author papers, one on a project he worked on as an NSERC Undergraduate Research Assistant, and one as a contributor to a review article covering the state-of-the-industry of solid oxide fuel cells. For the latter article, Jake did a considerable amount of work toward literature review and prepared many of the tables in the



manuscript, and wrote one of the sections. Because this article was a multi-institutional effort (McMaster, the US Department of Energy, and the Massachusetts Institute of Technology), Jake had to work with some of the top minds in the field to complete his contributions. On top of this, I invited Jake to contribute to an upcoming textbook chapter on CO₂ capture simulations, of which he developed simulations and text for about 20% of it.

Personal Achievement

Jake is, without question, not just a leader but a trailblazer. To illustrate perfectly: two weeks ago, a professor in our department resigned unexpectedly (three weeks into the term). With no other professors available to cover the 4th year course on advanced process control, our department chair asked Jake to take over as lead instructor, and he is now supervising one graduate student teaching assistant. Such things are offered to only the very best and most capable students. The best part is that neither the students nor the professors were surprised that Jake was “promoted” to a lecturer because of his long record of leadership in teaching and mentoring students. On his own initiative, he books a classroom weekly to hold help sessions for undergrads from not only the course he TAs, but for any chemical engineering undergraduate student. As a result the chemical engineering undergrads voted to give him the departmental TA award three years in a row. Then, last year, he was voted by the McMaster Student Union to receive the McMaster University Teaching Assistant Merit award. This is not the first time he was asked to fill a teaching role at the last minute either—in fact, he was asked to fill into a teaching assistant spot in an emergency at least three times to my knowledge, for a total of twelve teaching assistantships (across several disciplines actually), when the norm for any PhD student is four.

Our department typically relies on Jake to take the leadership role in organizing visitations for prospective graduate student visits, student travel to conferences, meetings with visiting seminar speakers, leadership in planning our student conference, and many others. Although these are small things, collectively they serve to illustrate the mentality the faculty members have here: whenever we need a student to lead something, Jake is the first one we ask. In addition, Jake goes above and beyond to contribute to student life here. For example, he organizes some absurdly large number of our sports teams (and was a finalist for the Therese Quigley Award of Excellence for it), he shepherds new international graduate students to help them adjust to our culture and academic life, he has been an officer in various clubs that are too numerous for me to track, he mentors young undergraduate students having trouble adjusting to university life, he tutors failing students, and he gives tours to visiting high school students who are interested in chemical engineering.

In other words, he has to work with a diverse range of people from high schoolers, to undergraduates, to graduates, to professors, and to industrial professionals. He is the one who helps international students fit into to new culture, he is the one who helps the encourages the troubling students to succeed, he is the one who builds social cohesion amongst the students in my group and the department, he is the one that undergraduate students book time with just for some counseling and an open ear, and yet somehow he still has time to be the one who makes sure that all 22 students get to the conference on the other side of the country in time. It is easy to see why he was just elected the President of the Chemical Engineering Graduate Student Society. For Jake this means he will continue to make all of his contributions, but will now also handle the invitation of guest speakers to department seminars, career building workshops, social outings, banquets, and more to his already full plate.



On top of this, Jake has participated at conferences of both the Canadian Society of Chemical Engineering (CSChE) and the American Institute of Chemical Engineers (AIChE), not just as a presenting author but getting involved in networking events and meeting other researchers. In fact, this year his presentation was selected to be the keynote presentation for the systems division of CSChE at the next annual conference in two weeks.

He has also taken great leadership on his own research in finding additional funding for his project by making cold calls to potential industrial sponsors who might be interested in collaborating on his project. In fact, this has successfully resulted in invitations to companies such as Enbridge to discuss potential research collaborations. As mentioned earlier, I am entrusting Jake with a sizeable amount of funding for his project because he has the integrity, drive, and big-picture mentality required to make it happen.



It is my pleasure to write a reference for Fran as a OGS applicant. I have known her for 8 years as instructor and as her PhD supervisor. Fran is an exceptional student and one I feel very privileged to have supervised. She is an exceptional researcher, creative and hard working. She collaborates well and has worked with researchers in Australia and at the University of Waterloo, as well as a collaborator in Chemistry at McMaster. Her research is second to none. She has presented at conferences all over the world. While we have been somewhat slow to publish, that is only because she is working on several parallel themes at once and we are completing the details of the projects.

I took Fran as a graduate student because I could see in her a passion for science and an ability to work through a problem. She received top grades in all of her undergraduate classes but in talking to her, I realized that while in some cases, the material came to her quite easily, in other cases, she had to work to understand and that she was more than willing to do that. Fran is extremely smart but she is also willing to put in the work to achieve her goals and in my mind, this is an extremely valuable combination of skills. During her graduate work she has not disappointed. Her project has taken many turns and we have explored a number of different things – partly because of opportunity and partly because interesting options kept cropping up. Fran however is an extremely effective multi-tasker. She is able to get people to work with her to a common goal and to feel good about what they are doing.

Fran is differentiated from her peers in innumerable ways. Not only she is incredibly bright and motivated, she is one of the most caring and committed individuals I have ever met. She has more energy than anyone I know, and puts it to good use. Between her commitment to the Let's Talk Science Program at McMaster, her leadership abilities as the President of the GSA to her volunteer commitments at the hospital and leadership roles in her church, Fran is exceptional.

In addition to being a leader in the lab, with a team of at times 4 or 5 undergraduate students working with her, Fran has differentiated herself as a leader at the university level and beyond. She reluctantly took over the presidency of the McMaster Graduate Students Association and in less than a year, she has reorganized the GSA, dealing with some significant issues in the process. While there have been a number of leaders of the Let's Talk Science program, Fran has raised a significant amount of money for the program and recruited virtually every student in my lab to present to the schools.

Fran is an excellent presenter, writer and supervisor. She is one of the most popular teaching assistants in the department and last term when I had to be away, I did not hesitate to ask her to cover my class for me. She regularly tutors 1st and 2nd year students. In her work with Let's Talk Science, she routinely deals with young children and is an extremely effective communicator and ambassador for the engineering profession. In the lab, she has worked with students from all levels – high school students, undergraduate students and even my daughter, and is a confident and effective mentor. In her role as GSA president, she has had to deal with all levels of university administration as well as staff and people from outside of the university. She is an extremely effective manager and get things done.

In short, Fran has my full support for an OGS application. She is an exceptional student who meets all of the requirements for this award.

A handwritten signature in black ink, appearing to read "Allenda". The signature is written in a cursive style with a horizontal line at the end.