



# Jessica G. Swallow

**Graduate Institution:** Massachusetts Institute of Technology

**Graduate Discipline:** Materials Science

**Hometown:** West Kingston, RI

**Relevant SC Research:** Basic Energy Sciences

## Research Interest:

I am primarily interested in researching materials for energy generation or storage. In the past I have done research synthesizing and characterizing novel thermoelectric materials, including  $\text{Ca}_5\text{In}_2\text{Sb}_6$  and  $\text{Sr}_3\text{AlSb}_3$ . At MIT I plan to continue studying energy materials, possibly including photovoltaics, thermoelectrics, materials for fuel cells, or catalysis within these materials systems. I am interested in the relationships between microstructure and properties in materials, as well as the ways that processing methods can control the microstructure of a material. Although these are my personal research interests, I would also like to learn about

novel energy systems or new ways of minimizing energy waste in large-scale processes including bulk manufacturing. Furthermore, I am curious about recent developments in the field of nuclear energy, although that is not my particular area of study.

## About Me:

After completing my bachelor's degree in Chemical Engineering with a focus in materials science and a minor in English at Caltech, I am looking forward to pursuing a PhD in Materials Science at MIT this coming fall. At Caltech I worked with Dr. Jeffrey Snyder to investigate the thermoelectric properties of Zintl compounds such as  $\text{Ca}_5\text{In}_2\text{Sb}_6$  and

$\text{Sr}_3\text{AlSb}_3$ . I also studied the effects of solid solution scattering on the thermoelectric properties of the  $\text{Ca}_5\text{Al}_x\text{In}_{2-x}\text{Sb}_6$  system. At MIT I will work on problems related to energy materials, but I am still undecided about which specific type of material I will be studying. I aspire to one day enter academia as a professor and continue to confront the problem of sustainable energy generation and storage.

I enjoy many forms of athletic activity, including soccer, diving, track and field, and volleyball. In my spare time I occasionally draw but more often read books, and I also enjoy going to the beach or to the theater. I am excited to watch the Olympics this summer, especially the gymnastics and the diving.



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