John Goodfellow

Graduate Institution: Stanford University

Graduate Discipline: Materials Science and Engineering

Hometown: Westwood, MA

Relevant SC Research: Basic Energy Sciences

Research Interest:

My current research is focused on the ultrafast response of thin film ferroelectrics and multiferroics to excitation by both optical and THz radiation. The optical work aims to elucidate the unique photovoltaic mechanisms in nanoscale ferroelectrics resulting from their domain structure and lack of centrosymmetry.

Elsewhere in the electromagnetic spectrum, I am using THz excitation to explore the possibility of coherent manipulation of the ferroelectric polarization by ultrashort, quasi-unipolar electric fields. My general interest lies in using THz pulses to initiate phase transformations which aren't otherwise accessible to ultrafast techniques.

In the future I am interested in doing some work on the pure photonics side of THz technology. Future work on coherent control will require significant advances in THz sources that can generate tailored pulse shapes or pulse trains.

About Me:

As an undergraduate I studied materials engineering, both at Brown University and during a year abroad at the University of Cambridge. I came to Stanford for graduate studies, primarily by the opportunity to work at SLAC and experience the national lab environment.

In the long term, I see myself in academia. In addition to the ability to direct cutting edge research, the prospect of teaching is appealing to me. I tend to evaluate the courses I take as much on the basis of their pedagogy as on their content. My year in Cambridge was particularly useful in exposing me to a completely different academic philosophy which I believe will inform my own teaching if I should find myself in an academic position. I'd also enjoy the opportunity to share my enthusiasm and views on science. Beyond the utility that it is often associated with, I strongly believe in the ability of science to enrich everyday experience.

Outside of research, my favorite pastime is playing and listening to music. I enjoy playing guitar and piano, and building my CD collection.