Tips for the CAREER proposal

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My Background

• Received my PhD in chemical engineering from MIT in 2007

• Conducted 2 years of postdoctoral research in chemistry at Harvard from 2007-2009

• Started faculty position at USC in the chemical engineering and materials science department in 2009
History with NSF grants

• I applied for a CAREER award in 2009 before I started my faculty position, but I did not get it.

• I served on several CMMI and CBET panels in 2010 and 2011.

• I kept applying for non-CAREER grants.

• I received a CMMI grant in 2011.

• I went to the NSF CAREER workshop in Reno in 2012.
**Goal:** understand the kinetics and mechanisms associated with introducing \textit{micron-scaled porosity} into vapor deposited films

**Experimental approach:** use extremely low \textit{substrate temperatures} to freeze the monomer while simultaneously polymerizing it
Key Advantages

• Solvent is not required and therefore monomer/polymer solubility is not an issue
• Bottom-up process allows for the production of porous-on-porous materials

Potential Applications

• Microfluidic Devices for Point-of-Care Disease Detection
• Membranes for Water Purification
• Develop a multi-tiered mentorship program aimed at recruiting, retaining, and advancing female undergraduate and graduate students in engineering fields

• Develop hands-on experiments for K-12 outreach in downtown Los Angeles
• You must start your proposal early

• It is always good to get other people’s input—they can help you decide what is relevant and interesting—you must give them time to proofread

• 15 pages is very short! — you need time to cut down the information
• Highlight the *new* aspects of your research
  
  • Where is your field today?
  • How is your proposed approach different?

• How does your CAREER proposal differ from your previous work as a graduate student and/or postdoc?

• How does your CAREER proposal differ from your previous funding?
The CAREER grant is different from other grants– they are funding your long-term research goals, not a specific project.

Explain how your proposed research fits into your 5-10 year career trajectory.

Explain why you are the right person to tackle this project.
If successful, so what?

- Answer: If successful, so what?

- What *applications* might benefit from your proposed work?

- What *fundamental insight* will be gained from your proposed work?

- What *broader impacts* will you achieve?

NOTE: This is what reviewers will be asked about your proposal.
• Add a timeline of your proposed experiments

• Show some proof-of-principle experiments, particularly if your idea is novel and it is not obvious that it will work (note: this is my suggestion)

• Give examples of model systems that you will study
Broader Impacts

• First discuss your prior outreach experience
  
  • Have you volunteered at local museums or high schools?

  • Have you mentored undergraduate students? Where are they now?
What will you do next?

• Pick a project that you are excited about

• Are there programs at your university that can help you implement your project? Get support letters.

• Why is your project important? Cite literature to show how your project might influence society

• Add some preliminary K-12 outreach experiments
In summary.....

• Highlight throughout your proposal how the CAREER award will help you establish your *long-term* career goal to be a leader in your field.

• Highlight the *scientific impact* -- both fundamental and applied

• Highlight the *broader impacts* of your study

GOOD LUCK!!!!!!!