IGERT

Integrative Graduate Education and Research Traineeship
National Science Foundation
IGERT is…

- An interdisciplinary training program, educating U.S. Ph.D. scientists and engineers by building on the foundations of their disciplinary knowledge with interdisciplinary training.

- Collaborative research that transcends traditional disciplinary boundaries and requires teamwork, providing students with the tools to become leaders in the science and engineering of the future. IGERT students obtain the personal and professional skills to succeed in their careers.
• 242 IGERT programs have been funded by the NSF.
• Programs run for 5 – 6 years. 150 are currently active.
• The UR IGERT Program was one of 20 chosen in 2010, out of 450 white papers submitted.
Distributed Renewable Energy: From Science and Technology to Entrepreneurship and Policy

- The University of Rochester’s first IGERT grant. In the field of energy and in particular renewable energy, the need for multidisciplinary training in science, technology, entrepreneurship, economics, and policy is particularly acute.

- Students receive training in economics, communications, and education, as well as a first-hand understanding of the multicultural and global aspects of renewable energy.
IGERT on Distributed Renewable Energy: From Science and Technology to Entrepreneurship and Policy
Who Can Apply?

• Rochester's IGERT funds Ph.D. students working in STEM disciplines on projects related to energy.

• IGERT traineeships are restricted to those PhD students who are U.S. citizens and permanent residents of the U.S.
“Pioneer” IGERT students

Rebecca Berman
Optics

Shawn Divitt
Optics

Chris Favaro
Chemistry

Josh Winans
Mat. Sci.

Dan Williams
Optics

Lenore Kubie
Chemistry
Second Cohort of IGERT Students

Amanda Preske  Chemistry
Chanse Hungerford  Optics

Joe Choi  Optics
Stephen Head  Optics
Tyler DuBeshter  CheM. Eng.
Third Cohort of IGERT Students

Maria Abreu-Sepulveda  
*Materials Science*

Andrew Durney  
*Chem. Eng.*

Kenny Goodfellow  
*Optics*

Francis Smith  
*Elec. & Comp. Eng.*

Dallas Smith  
*Optics*

Mujtaba Syed  
*Chem Eng.*
UR IGERT Leadership Team

Director:
Matthew Yates  Chair of Chemical Engineering, Director of the UR Energy Research Initiative

Co Principal Investigators:
Todd Krauss  Chemistry
Duncan Moore  Optics and Vice-Provost for Entrepreneurship
Larry Rothenberg  Political Science

IGERT Program Coordinator:
Vicki Heberling  Administrative Assistant for the Energy Research Initiative
Initial Scientific Thrusts

1. Inexpensive and Environmentally Benign Solar Cells
2. Optical Techniques For Efficient Sunlight Capture
4. Self-Assembly and Field-Directed Assembly for Fuel Cell Catalysts and Membranes
5. Economic and Business Models, and Public Policy
6. Understanding Motivations and Tradeoffs
<table>
<thead>
<tr>
<th>Year in Graduate School</th>
<th>Period of The Year</th>
<th>IGERT Course / Internship/ Seminar / Conference</th>
<th>Instructors/ Coordinators Course Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td>Fall</td>
<td>Courses in home dept (may include energy-related courses)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>Courses in home dept. (may included energy-related courses)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spring</td>
<td>Application to the IGERT program and admission</td>
<td></td>
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</table>
## IGERT Educational Journey - YEAR 2

<table>
<thead>
<tr>
<th>Year in Graduate School</th>
<th>Period of The Year</th>
<th>IGERT Course / Internship / Seminar / Conference</th>
<th>Instructors / Coordinators Course Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 2</td>
<td>Fall</td>
<td>Energy for the 21st Century (Required course)</td>
<td>CHE 488 (Yates)</td>
</tr>
<tr>
<td></td>
<td>Fall</td>
<td>Economics, Marketing, and Strategy for Primer for Entrepreneurs (Required course)</td>
<td>TEM 401 (Goettler)</td>
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<td></td>
<td>Fall</td>
<td>Energy specific courses (CHE 460-Solar Cells, CHE 492-Fuel Cells)</td>
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<td></td>
<td>Fall</td>
<td>Required Conference (Advanced Energy)</td>
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<tr>
<td>Intersession</td>
<td></td>
<td>Required Seminar Series: Academic, Industrial, and Government Careers</td>
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<tr>
<td>Spring</td>
<td></td>
<td>Courses in home dept. (may included energy-related courses)</td>
<td></td>
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<tr>
<td>Spring</td>
<td></td>
<td>1 or 2 TEAM Courses only for those pursuing MS in Energy Entrepreneurship</td>
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</table>
### Year 2 Continued – Summer Internship

<table>
<thead>
<tr>
<th>Locations so far:</th>
<th>Summer</th>
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<tbody>
<tr>
<td>NREL, Golden CO.</td>
<td>REQUIRED internship in US, European (or other) (laboratory or industry) (Internship may be paid or unpaid. Stipend will be temporarily suspended if paid, then added back after final IGERT semester. Travel and lodging NOT reimbursed for THIS internship.)</td>
</tr>
<tr>
<td>Lawrence Livermore, CA</td>
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<tr>
<td>Yamagata University, Japan</td>
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<tr>
<td>Seoul University, Seoul, Korea</td>
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<tr>
<td>Solexel, Milpitas, CA</td>
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<tr>
<td>Emcore, Albuquerque, NM</td>
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<tr>
<td>General Motors, Roch</td>
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<tr>
<td>Polymer Plus, Valley View OH,</td>
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<td>IBM, Yorktown Heights</td>
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</table>

Recommend start looking January prior. No UR course #, not a UR internship.
# IGERT Educational Journey - YEAR 3

<table>
<thead>
<tr>
<th>Year in Graduate School</th>
<th>Period of The Year</th>
<th>IGERT Course / Internship/ Seminar / Conference</th>
<th>Instructors/ Coordinators Course Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 3</td>
<td>Fall</td>
<td>1 or 2 TEAM Courses for those pursuing MS in Energy Entrepreneurship</td>
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<td></td>
<td>Spring</td>
<td>Required Conference (DOE AARPA-E)</td>
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<td></td>
<td>Spring</td>
<td>Required Short Course: “Working, Researching, and Teaching in Africa”</td>
<td>Rebecca Berman and Lenore Kubie</td>
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<td></td>
<td>Summer</td>
<td>Spring</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Teaching, field work, and conference in Africa (Travel paid)</td>
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African Internship

Attend and present at the I-SEE solar energy conference at Kwame Nkrumah University of Science and Technology located in Kumasi, Ghana.

Teaching demonstrations at Ghanaian primary schools.

Touring energy facilities, and installing solar panels
### IGERT Educational Journey – YEAR 4 and Beyond

<table>
<thead>
<tr>
<th>Year in Graduate School</th>
<th>Period of The Year</th>
<th>IGERT Course / Internship/ Seminar / Conference</th>
<th>Instructors/ Coordinators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 4</td>
<td>Fall</td>
<td>Last semester of IGERT funding: students present poster at Energy for the 21st Century Symposium</td>
<td>Advisor</td>
</tr>
<tr>
<td></td>
<td>Spring and beyond</td>
<td>Complete PhD degree requirements in home department</td>
<td>Advisor</td>
</tr>
</tbody>
</table>
Things to Consider

• Students - It will not take you longer to get your PhD, but you will be required to take additional classes, internships and attend conferences and meetings.

• Advisors – IGERT will not take up all of your students time, but they must be allowed to actively participate in all aspects of the program.
Next Steps

• Applications for fourth cohort IGERT students (with funding starting July 1, 2013) due on Friday, April 5

• Documents required:
  – Statement of interest
  – CV
  – Statement about research directions and/or advisor(s)
  – Letter of recommendation from advisor(s)

• Decisions expected by April 15 or before