Materials Genome Initiative

Typical Time Frame ~ 15-20 years!

Current Activities

Goal: Reduce Cost and Time by Half

The Materials Genome Initiative:

MGI’s Three Pillars:

- Developing a Materials Innovation Infrastructure
- Achieving National Goals With Advanced Materials
- Equip Next Generation Work Force

D³EM’s Contribution
D³EM: Data-Enabled Discovery and Design of Energy Materials NSF-DGE-1545403

SIX DEPARTMENTS • THREE DISCIPLINES • ONE VISION

Building a collaborative framework for the accelerated development of materials through materials science, informatics, and engineering design.

TRANSCEND DISCIPLINES

LAUNCH SUCCESSFUL CAREERS

IMPACT ENERGY TECHNOLOGY & SYSTEMS

MATERIALS FOR:
- Energy Storage
- Energy Conversion
- Sustainability
- Energy Efficiency

Pl: R. Arroyave, Co-Pls: D. Fowler, R. Malak, E. Dougherty, J. Ross
SP: M. Radovic, H. Zhou, J. Lutkenhaus, D. Allaire, P. Shamberger, S. Banerjee

College of Science: Chemistry, Physics

College of Engineering: Materials Science, Chemical Engineering, Mechanical Engineering, Electrical and Computer Engineering

Integrating Education and Research

EDUCATION
PEDAGOGICAL MODEL

RESEARCH

Emphasis on Developing Employer-desired Professional and Technical Skills

Highly Interdisciplinary Training and Research Programs
Main Features of D^3EM

**KEY FEATURES:**
- Employer-driven Learning Outcomes
  - See survey results: Table 2, Page 6
- Disciplinary Grounding followed by Interdisciplinary Learning
- Reflection through e-Portfolio Learning Community
- Faculty Community of Scholars
- Summer School on Computational Materials Science
- Capstone Materials Design Studio
- Energy and Entrepreneurship
- Research on Pedagogical Impact and Dissemination in Scholarly Literature

**TIMELINE**

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<th>YR 1</th>
<th>SU 1</th>
<th>YR 2</th>
<th>SU 2</th>
<th>YR 3+</th>
<th>SU 3</th>
<th>YR 4+</th>
<th>SU 4</th>
<th>YR 5+</th>
<th>SU 5</th>
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**LEADERSHIP**
- 9 NRT Faculty • 10+ Affiliated • External Advisory Board • Internal Admin. Council

**TRAINEES**
- 41 NRT-funded MS, PhD Students • 40+ Additional Participants • 2 Education PhDs

**INCLUSION**
- Broad Recruitment Strategies • Partnership w/ URM Schools • Targeted Fellowships
- Learning Community • Faculty/Peer Mentoring • Individual Development Plan

**New Certificate Program**

**Cross-Disciplinary Core**
- + Materials
- + Informatics
- + Design

**Interdisciplinary Core**
- Materials Design Studio

**Flexible Terminal Tracks**
- - Entrepreneurship
- - Energy
- - Computational Materials
- - Internships

**Competitive Fellowships Available!**

Launching in 2016

http://d3em.tamu.edu