Interdisciplinary Materials Research and Education at UCSB

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UCSB Materials: Background

31 Affiliated Faculty: 22 FTE

Graduate Only
- 5 year BS/MS program (~4-5 students/year)
- PhD students (140 to 150)

Departments
- Chemical Engineering
- Computer Science
- Electrical & Computer Engineering
- Materials
- Mechanical Engineering
- Technology Management Program
Many faculty interact across disciplinary boundaries
Interfacing with Other Departments

Materials courses part of required curriculum in MechE, ChemE, & ECE

Undergraduate
- Intro to Materials 101, 100A-C
- Cross-listed courses on polymers, solid state, etc.

Graduate
- Engineering Quantum Mechanics
- Electronic Solids
- Mechanics of Materials

Positives
- maintains educational ties

Challenges
- scheduling
- integration of changes in curriculum across departments

Advising graduate students across Departments

Few barriers to advising students across departments in Engineering or Letters & Science

Positives
- dynamic experience for students

Challenges
- variance of PhD exams
- disparities in graduate student salaries
- TA duties vary across Departments
Interdisciplinary Research Centers

**Positives**
- research themes are multidisciplinary
- "neutral" ground for joint grants
- added administrative support

**Challenges**
- dilutes overhead return to Department
- coordination of activities
NSF Q-AMASE-i Quantum Foundry

- NSF’s inaugural center into materials for quantum information $25M/6 years
- Ania Jayich & Stephen Wilson + 20 faculty (Materials, Physics, ECE)
- 9 tools developed for synthesis, characterization and control of QIS materials

New center for engagement of Materials and Physics faculty