

# Interdisciplinary Materials Research and Education at UCSB



**Michael Chabynec**  
Materials Department  
University of California Santa Barbara





**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

# Materials Research at UCSB



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

## Advising graduate students across Departments

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

### Positives

- maintains educational ties

### Challenges

- scheduling
- integration of changes in curriculum across departments

### Positives

- dynamic experience for students

### Challenges

- variance of PhD exams
- disparities in graduate student salaries
- TA duties vary across Departments



# Interdisciplinary Research Centers



California Nanosystems Institute



## Positives

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

## Challenges

- dilutes overhead return to Department
- coordination of activities



UC SANTA BARBARA

# 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

