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**Office Hours:** By appointment  
**Lecture:** W2W3W4

**Course Goals:** This course will provide students with an introduction to nanomaterials and biomaterials used in different kinds of applications. We will survey important classes of nanomaterials (e.g., carbon-based nanomaterials and quantum dots) and biomaterials (e.g., naturally-derived biomaterials and polymeric biomaterials), discussing material preparation, processing, properties and applications. We will also offer an experimental section about the preparation and micropatterning of actin filaments.

**Textbook:** N/A; class notes/journal papers/magazine articles

**Grade:**

Report (assignment) (3) 30%; 250 words (in English)

Report (experiment) (1) 15%; 250 words (in English)

Exam (1) 20%

Final Report & Presentation 35%; 1000 words (in English)

**Tentative Schedule:**

Week 1 (9/18): Introduction to nanomaterials

Week 2 (9/25): Quantum dots/nanoparticles (e.g., CdSe)

Week 3 (10/2): Preparation of nanomaterials (e.g., self-assembly) [Report]

Week 4 (10/9): Lecture given by Dr. Michinao Hashimoto (MIT)

Week 5 (10/16): Introduction to biomaterials

Week 6 (10/23): Naturally-derived biomaterials (e.g., collagen)

Week 7 (10/30): Polymeric biomaterials (e.g., PE/PDMS) [Report]

Week 8 (11/6): Experimental (paper diagnostic systems) [Report]

Week 9 (11/13): Midterm

Week 10 (11/27): Application (1) Tissue Engineering

Week 11 (12/4): Application (2) Chemical-/Biological-sensing

Week 12 (12/11): Application (3) Nano-/Micro-fluidics

Week 13 (12/18): Application (4) Point-of-Care Diagnostics [Report]

Week 14 (12/25): adjustment

Week 15 (1/8): Project presentation [Report]