

Solution Processed Optoelectronics: from Colloidal Nanomaterials to Biomedical Applications

CHE 696 Fall 2023 (3 Credits)



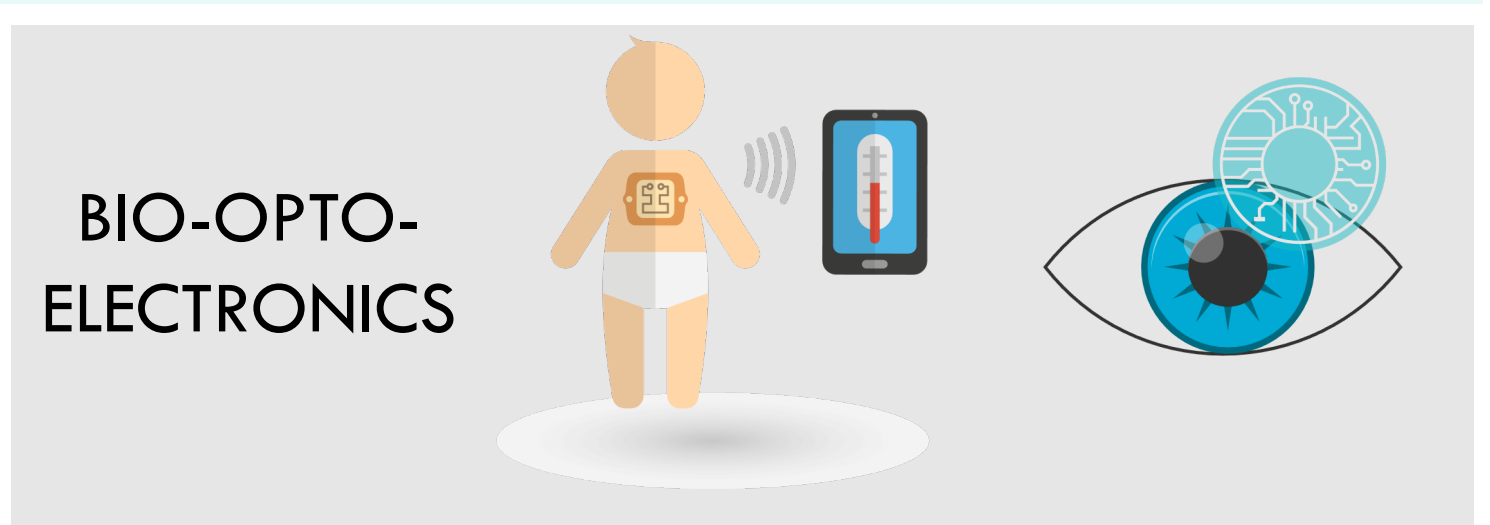
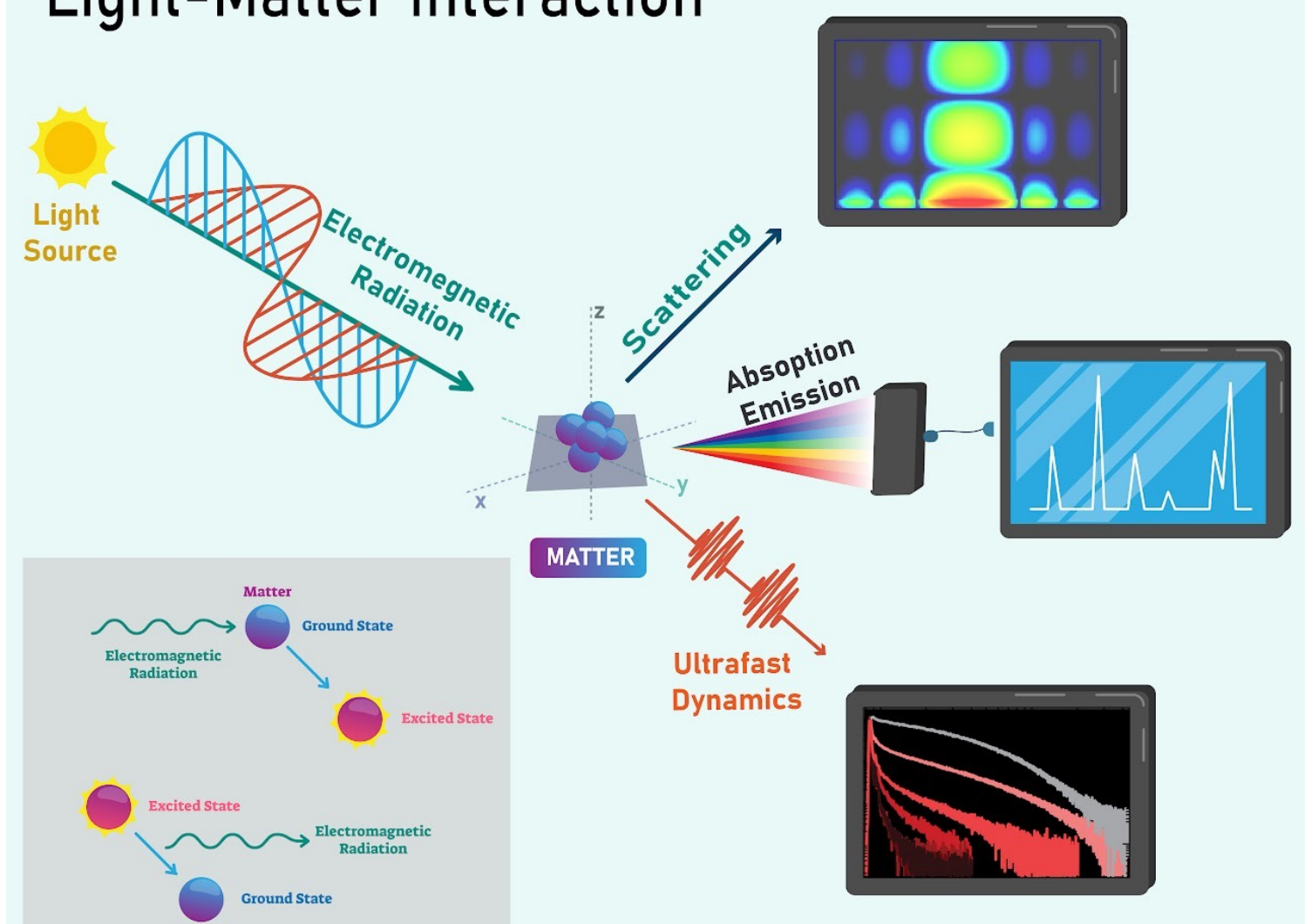
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If you are interested in nanomaterials and nanotechnology, light-matter interaction, solution-processed optoelectronic materials and device, and their biomedical applications, this is the course for you!

Course Description: This is a multidisciplinary class that covers the optical and electronic properties of a wide range of solution-processed semiconductors, including inorganic nanomaterials, hybrid organic-inorganic metal halide perovskite, conjugated polymer, etc. Thin film optoelectronic devices made from these next-generation semiconducting materials will be discussed. Specifically, we will learn the device physics of solar cells, light emission diodes, and photodetectors. Biomedical applications of the flexible and wearable optoelectronics will be reviewed in the course.

Light-Matter Interaction



Grading: Individual and team presentations are expected. Individual final written report. No midterm and final examinations.

Prerequisite: This course is intended for graduate students and undergraduate seniors from broad engineering disciplines. The following academic background is not required but will help in better understanding the content in this course: college level math and physics, materials science and optics, intro-level semiconductor physics, solid state physics.