

NANO 708 – Spring 2018 (3 cr.)

Nanomaterials for Photovoltaics

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Office: EP 221
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Starting Date: Tu, January 9, 2018
Time: Tu, Th 8:30 AM-9:45 AM, MST
Location: EP 215A

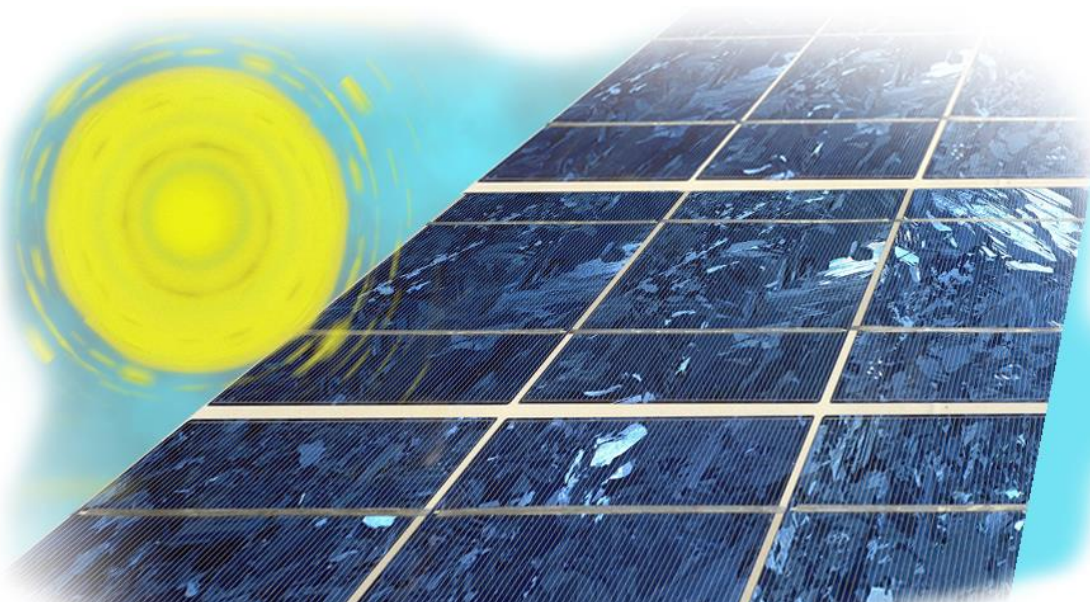
Primary Text:

The Physics of Solar Cells, by Jenny Nelson, Imperial College Press, 2003.

Additional material and background will be drawn from the following:

Third Generation Photovoltaics, by Martin A. Green, Springer, 2006.

Description: Photovoltaic technologies rely increasingly on the engineering of materials and structures on the nanometer length scale. This course will explore the processes by which electricity can be generated from radiant sources, especially the sun, using photovoltaic (PV) and thermophotovoltaic devices. The analysis of electrical junctions and their uses for PV devices will be covered in depth. The course will develop the underlying theory of generation, recombination, and transport of electrical charge carriers in semiconducting materials. Challenges in utilizing various nano-, poly-, and single-crystalline materials for solar-energy conversion will be elucidated. The optical properties of thin, solid films will be prominent in this discussion.



Prerequisites: Graduate standing. Interested undergraduate students should contact the instructor.