

**Department of**

**Chemical and Environmental Engineering**

**2013—2014 Seminar Series**

**Friday October 25, 2013**

**9:30—10:30 AM**

**WCH 205/206**



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**Professor**

**Department of Chemistry and Biochemistry**

**UC Santa Barbara**

## **A New Way to Harvest the Sun's Energy**

Sunlight can be converted to electrical energy in photovoltaics, and directly into fuels and valuable chemicals through photosynthesis, mimicking in a simplistic way what plants do. The former underlies a robust international industry which yearly (2012) generates somewhat over \$100B in revenues. The latter is largely unexploited largely because artificial photosynthesis devices based on semiconductors currently come in two varieties: those that are efficient but not robust, often failing in minutes; and those that are long-lasting but inefficient. A new option: converting plasmons -- conduction electron resonances -- into charge carriers will be described that may allow us to strike a compromise between efficiency and durability to convert water, or carbon dioxide, or chemical waste into desirable products autonomously, when the sun shines.