LMI-EFRC: a national resource for fundamental optical principles and design for solar energy conversion. Goal: to tailor the morphology, complex dielectric structure, and electronic properties of matter so as to sculpt the flow of sunlight and heat, enabling light conversion to electrical energy with unprecedented efficiency.

http://lmi.caltech.edu

RESEARCH PLAN

Challenge: Solar energy conversion that effectively utilizes the entire solar spectrum. Approach: Photonic design combining fundamental limits to solar conversion efficiency, spectrum splitting and control, broad angle light capture and concentration, and thermal photonics. Outcome: Photonic principles that enable record photovoltaic conversion efficiency and utilization of the entire visible and infrared solar resource.