



Kansas Center for Solar Energy Research

www.solarenergy.ku.edu

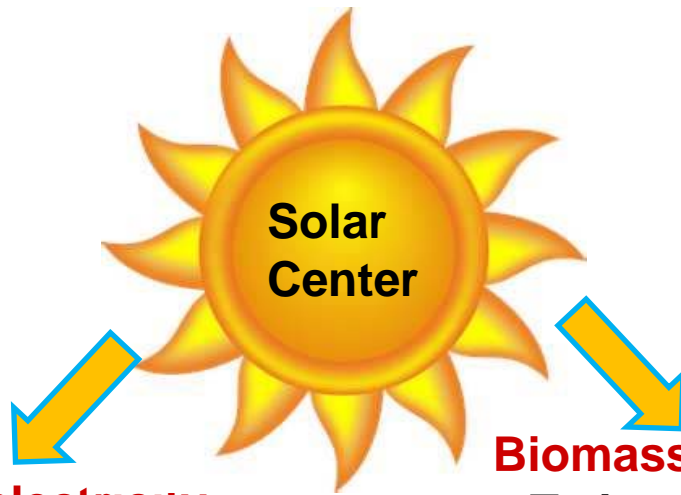
- Judy Wu, KU
- Jun Li, K-State
- Paul Rillema, W-State



29 research groups from Kansas research universities
(KU – 15, K-State – 10, W-State 4)
in biology, chemistry, engineering and physics

Plus a broad collaboration nationally and internationally

Broad-band photosensitizer



Algae (Smith-KU)

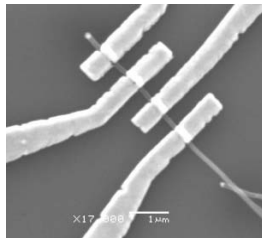
(Francis D'Souza-WSU)

Advanced solar cells--electricity:

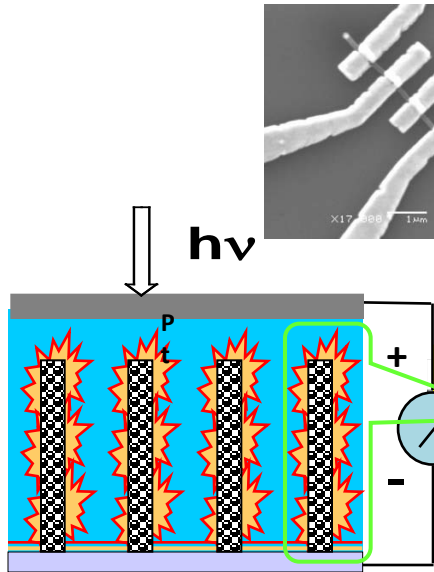
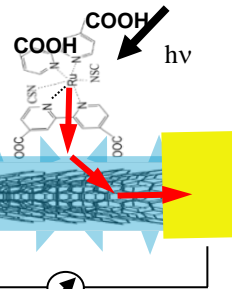
- Cost-performance balanced solar cells
- Energy storage and distribution

Biomass to biofuel

- To improve environment
- To reduce reliance on fossil fuels
- To produce 36 Billions gal by 2022

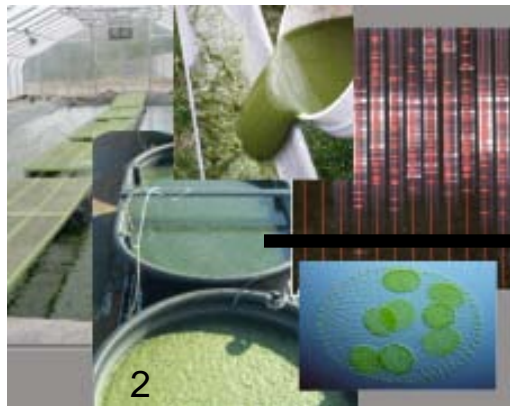


(Wu-KU)

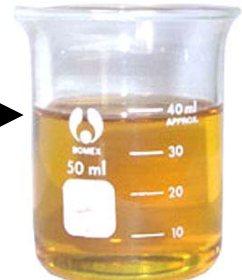
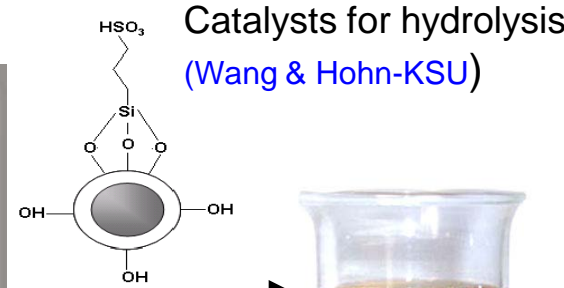


(Jun Li-KSU)

Nanostuctured dye-sensitized solar cells

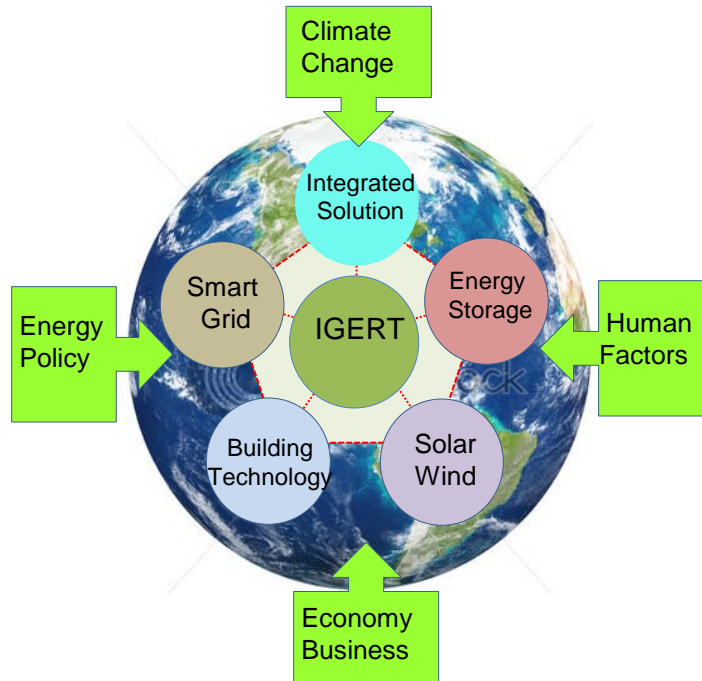


Algae production (Schneegurt-WSU, Smith, Sturm-KU)



Biodiesel (Williams-KU)

Developing Integrated Solutions for Sustainable Energy Generation, Distribution, Storage and Usage (IGERT proposal pending)



Built-environment:

- 41% of national primary energy
- 73% in electricity
- A platform for energy research
- Tremendous business opportunity (i.e. Black & Veatch, Burns & McDonnell, Westar, TradeWind, Schneider Electric, Treanor Architects)





Up to \$10,000 in Scholarships per year through NSF funded program in renewable energy at KU



KU sophomores and juniors in Science, Technology, Engineering or Math (STEM) majors with an interest in renewable energy can apply for \$10,000 renewable scholarships that last up to 3 years.

Recipients will take a renewable energy/nanotechnology course in the spring semester and will have additional opportunities to grow through faculty mentoring, seminars, field trips and outreach activities.

Selected students can also take part in renewable energy focused research with one of more than three dozen KU faculty mentors.

Activity Highlights (in 1.5 yr)

Education/outreach

- 35 graduate students (6 female, 1 African American), 3 postdocs (1 female)
- 19 REU students (4 female, 1 African American, 1 Native American)
- KSU chemistry symposium attended by ~180 high school students/teachers

Awards and honors

- Michael Dunaway—2011 NSF Graduate Research Fellowship
- Logan Wille—2011 Goldwater scholarship
- Caleb Christianson—2011 Non-Traditional Student Leader Scholarship
- Caitlin Rochford – 2011 AAUW American Fellowship and KU Summer Research scholarship
- Susan Sun—appointed recently as a KSU Distinguished Professor
- Francis D'Souza—elected to the fellow of ACS Electrochemistry Soc.

Hosted

- 5 entire team research workshops and annual reviews, 8 bimonthly joined 3-campus video seminars, plus many small group discussions
- 4 external seminars: H. Abruna (Connell); Meyya Meyyappan (NASA); Yanfa Yan (NREL) and Julia Carrier (Arkansas)

Generated

- 56 manuscripts (many via collaboration)
- 51 papers at national/international conferences
- >50 proposals with 16 funded of total: ~ **\$5.8 M** (we have paid off!)

Collaborated with

- Industrial network** for joined grants (4 funded)
- National labs and other institutions** –AFRL, Argonne, Ames, LANL, NASA, NREL, Notre-Dame, ORNL, many universities.