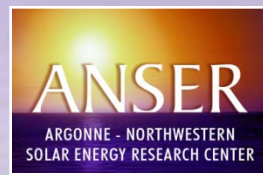


Team Science Directed Toward Opportunities in Energy Research

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<http://www.ANSERCenter.org>

Developing a Large Team for Fundamental Research: ANSER

What did DOE want?

- A synergistic team organized around scientific themes enumerated during several DOE workshops.
- Teams that take advantage of institutional strengths (universities and national labs)
- “Active management” of research to take advantage of changing research opportunities and climate.

How did we achieve it?

- Identified key scientific challenges directed to the DOE mission.
- Organized sub-teams around these challenges.
- Mixed well-established investigators known to DOE with new young investigators.
- Made real connections between the research of sub-teams.
- Developed a “rapid-response” management plan.

Argonne-Northwestern Solar Energy Research (ANSER) Center

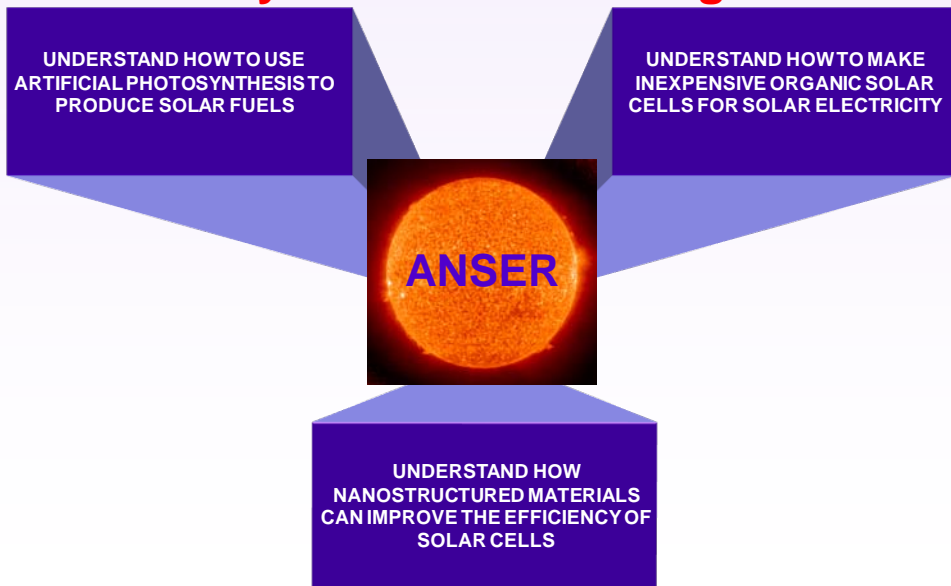
ANSER Center Scope

24 Principal Investigators, 5 Institutions, \$19M/5yrs

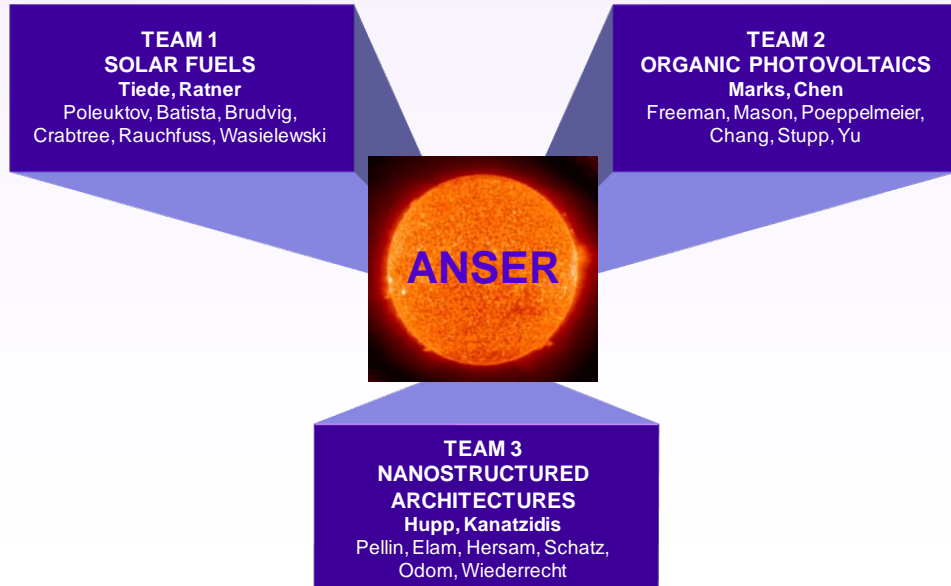
ANSER Center Vision

- Dramatically improve the conversion efficiency of solar photons to fuels and electricity
- Achieve a new understanding of fundamental solar energy conversion mechanisms
- Design, synthesize, and self-assemble new nanoscale architectures for solar energy conversion

Key Scientific Challenges



Research Teams



Developing a VERY Large Team: An Energy Innovation Hub

What did DOE want?

All of what they wanted for Energy Frontier Research Centers, PLUS

- Significant role for engineering, systems integration, economics and public policy.
- Central Facility for integrating research activities (the Hub).
- Significant participation by industry and flexible IP management .
- Highly-responsive, “Active Management”.

How did we propose to achieve it?

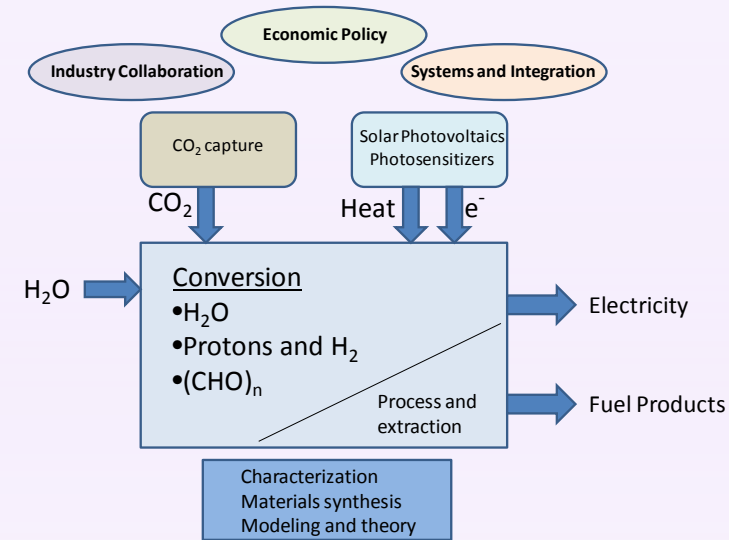
- Identified key challenges for translating basic science into pre-commercialization technologies.
- Organized teams around technical challenges, engineering, economics, and public policy.
- Secured a laboratory building to serve as the Hub facility.
- Engaged engineers with systems integration skills to address the requirements for rapid translation of concepts into prototypes.
- Developed “rapid-response” management and IP plans.

SoFIA Scope:

90 Principal Investigators
 10 Institutions, \$122M/5yrs.

SoFIA Vision:

- Develop near-term technology that will integrate high-performance photovoltaics with new electrocatalytic systems for water splitting and carbon dioxide reduction to fuels, so that the photoconversion and fuels formation technologies can be sited at different locations.
- Develop intermediate-term technology that will produce liquid fuels from carbon dioxide directly from sunlight in a site-independent, integrated device usable for both large and small scale installations.



Nuts and Bolts of Team Science 1.

- Engage the sponsor often to make sure that you are absolutely certain as to their goals and requirements.
- Develop a timetable for proposal development and adhere to it.
- Engage your sponsored programs leadership on Day 1 and work with them to optimize the timetable.
- Identify team leaders and develop a proposal development structure.
- Conduct an early all-hands meeting where expectations are clearly defined and consensus from participants is achieved.
- Work with team leaders to identify and develop synergies between teams throughout proposal development.

Nuts and Bolts of Team Science 2.

- Make sure that all support staff engaged in the proposal process know exactly what their duties are and when their contributions are required.
- Engage industry, when necessary, on Day 1. Partnering with industry frequently requires a lengthy “courtship” before decision makers will sign on.
- Identify and approach potential External Advisory Board candidates early in the process and make sure that they know exactly what you expect from them in return for their valuable time.
- Have two or three proposal team members check submission requirements periodically through the process and double check all documents and requirements prior to submission.

The Bottom Line:

ESTABLISH RIGOROUS ORGANIZATION AND FOLLOW IT !