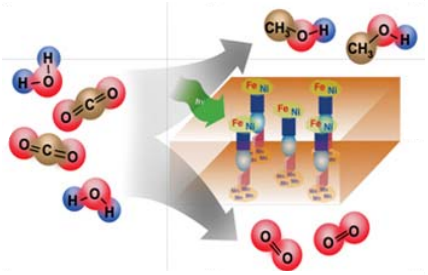
JCAP
JOINT CENTER FOR ARTIFICIAL PHOTOSYNTHESIS

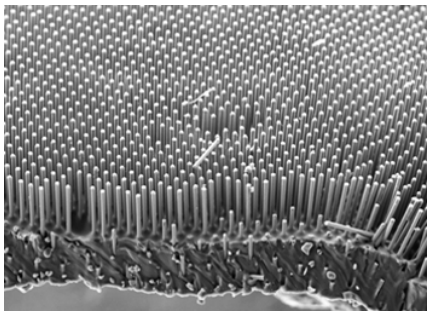
Fact Sheet
2010-2015



The Joint Center for Artificial Photosynthesis (JCAP) is the U.S. Department of Energy's Energy Innovation Hub for Fuels from Sunlight. The Center is located in two California-based sites, operated under a unified management structure. The Southern California site is on the Caltech campus in Pasadena, California and the Northern California site is at Lawrence Berkeley National Laboratory in Berkeley, California.

Amount: $122 million over five years, subject to Congressional appropriations.

Motivation: Finding a cost-effective way to produce fuels, as plants do, by combining sunlight, water, and carbon dioxide, would be a transformational advance in carbon-neutral energy technology.

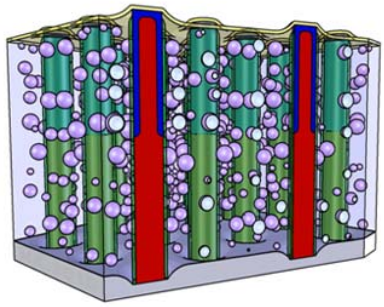


Mission: JCAP will develop and demonstrate a manufacturable solar-fuels generator, made of Earth-abundant elements, that will take sunlight, water and carbon dioxide as inputs, and robustly produce fuel from the sun 10 times more efficiently than typical current crops.

Members: JCAP partners include the California Institute of Technology, Lawrence Berkeley National Laboratory, the SLAC National Accelerator Laboratory, UC Irvine, and UC San Diego.

JCAP Director: Harry Atwater, Howard Hughes Professor and Professor of Applied Physics and Materials Science at the California Institute of Technology

Scientific Director: Nathan S. Lewis, George L. Argyros Professor of Chemistry at the California Institute of Technology



Research Areas

Accelerated Discovery: JCAP will accelerate the rate of discovery of Earth-abundant, robust materials that can capture and convert the energy of sunlight into chemical fuels. JCAP will dramatically expand the range of available light absorbers, catalysts, membranes, and system components for creating a fully non-biological photosynthetic system.

Science-Based Scale-Up: JCAP will develop the scientific understanding and capabilities for linking together nanoscale objects, including light absorbers, catalysts, and membrane units, to form fully functional artificial photosynthetic units. JCAP will then assemble these units into systems that function on increasingly larger length scales, to ultimately produce true artificial photosynthetic solar fuels generators that operate at moderate temperatures and remain functional for extended periods of time.

Development of Enabling Technologies: JCAP will develop high-throughput systems for evaluating millions of light absorbers, photocatalysts, and catalysts at unprecedented rates, methods and standards for benchmarking the performance of catalysts, photocatalysts, and full photosynthetic systems; theoretical tools for guiding discovery and modeling all aspects of the artificial photosynthetic system; streamlined access to advanced synchrotron-based techniques at DOE user facilities; and public databases for mining results generated by JCAP.

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