114TH CONGRESS  
2D SESSION  

H. R.______

To provide for the establishment at the Department of Energy of a Solar Fuels Basic Research Initiative.

IN THE HOUSE OF REPRESENTATIVES

Mr. Knight introduced the following bill; which was referred to the Committee on ______________________

A BILL

To provide for the establishment at the Department of Energy of a Solar Fuels Basic Research Initiative.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the “Solar Fuels Innovation Act”.

SEC. 2. SOLAR FUELS BASIC RESEARCH INITIATIVE.

(a) AMENDMENT.—Section 973 of the Energy Policy Act of 2005 (42 U.S.C. 16313) is amended to read as follows:
“SEC. 973. SOLAR FUELS BASIC RESEARCH INITIATIVE.

“(a) INITIATIVE.—

“(1) IN GENERAL.—The Secretary shall carry out a research initiative, to be known as the Solar Fuels Basic Research Initiative, to expand theoretical and fundamental knowledge of photochemistry, electrochemistry, biochemistry, and materials science useful for the practical development of experimental systems to convert solar energy to chemical energy.

“(2) LEVERAGING.—The Secretary shall leverage expertise and resources from the Basic Energy Sciences Program and Biological and Environmental Research Program within the Office of Science, and the Office of Energy Efficiency and Renewable Energy, as provided under subsections (b) and (c).

“(3) TEAMS.—The Secretary shall organize activities under the Solar Fuels Basic Research Initiative to include multidisciplinary teams leveraging expertise from the National Laboratories, universities, and the private sector to the extent practicable. These multidisciplinary teams shall pursue aggressive, milestone-driven basic research goals. The Secretary shall provide sufficient resources for those teams to achieve those goals over a period of time to be determined by the Secretary.
“(4) ADDITIONAL ACTIVITIES.—The Secretary is authorized to organize additional activities under this subsection through Energy Frontier Research Centers or other organizational structures.

“(b) ARTIFICIAL PHOTOSYNTHESIS.—

“(1) IN GENERAL.—The Secretary shall, as part of the Solar Fuels Basic Research Initiative, carry out a program to support research needed to bridge scientific barriers and discover knowledge relevant to artificial photosynthetic systems. In carrying out activities under this subsection, the Director of the Office of Basic Energy Sciences shall support basic research to pursue distinct lines of scientific inquiry, including photoinduced production of hydrogen and oxygen from water, and the sustainable photoinduced reduction of carbon dioxide to fuel products including hydrocarbons, alcohols, carbon monoxide, and natural gas. The Assistant Secretary for Energy Efficiency and Renewable Energy shall support translational research, development, and validation of physical concepts developed under this subsection.

“(2) STANDARD OF REVIEW.—The Secretary shall review the program activities under this sub-
section to determine the achievement of technical milestones.

“(3) AUTHORIZATION OF APPROPRIATIONS.—

“(A) AUTHORIZATION.—Subject to subsection (d), there are authorized for carrying out activities under this subsection for each of fiscal years 2017 through 2020—

“(i) $50,000,000 from funds within the Basic Energy Sciences Program account; and

“(ii) $25,000,000 from funds within the Energy Efficiency and Renewable Energy account.

“(B) PROHIBITION.—No funds authorized under this subsection may be obligated or expended for commercial application of energy technology.

“(c) BIOCHEMISTRY, REPLICATION OF NATURAL PHOTOSYNTHESIS, AND RELATED PROCESSES.—

“(1) IN GENERAL.—The Secretary shall, as part of the Solar Fuels Basic Research Initiative, carry out a program to support research needed to replicate natural photosynthetic processes by use of artificial photosynthetic components and materials. In carrying out activities under this subsection, the
Director of the Office of Basic Energy Sciences shall support basic research to expand fundamental knowledge to replicate natural synthesis processes, including the photoinduced reduction of dinitrogen to ammonia, absorption of carbon dioxide from ambient air, molecular-based charge separation and storage, photoinitiated electron transfer, and catalysis in biological or biomimetic systems. The Associate Director of Biological and Environmental Research shall support systems biology and genomics approaches to understand genetic and physiological pathways connected to photosynthetic mechanisms. The Assistant Secretary for Energy Efficiency and Renewable Energy shall support translational research, development, and validation of physical concepts developed under this subsection.

“(2) STANDARD OF REVIEW.—The Secretary shall review the program activities under this subsection to determine the achievement of technical milestones.

“(3) AUTHORIZATION OF APPROPRIATIONS.—

“(A) AUTHORIZATION.—Subject to subsection (d), there are authorized for carrying out activities under this subsection for each of fiscal years 2017 through 2020—
“(i) $50,000,000 from funds within the Basic Energy Sciences Program and Biological and Environmental Research Program accounts; and

“(ii) $25,000,000 from funds within the Energy Efficiency and Renewable Energy account.

“(B) PROHIBITION.—No funds authorized under this subsection may be obligated or expended for commercial application of energy technology.

“(d) FUNDING.—No additional funds are authorized to be appropriated under this section. This section shall be carried out using funds otherwise authorized by law.”.

(b) TABLE OF CONTENTS AMENDMENT.—The item relating to section 973 in the table of contents of such Act is amended to read as follows:

“Sec. 973. Solar Fuels Basic Research Initiative.”.