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(Original Signature of Member)

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.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

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

6 **SEC. 2. SOLAR FUELS BASIC RESEARCH INITIATIVE.**

7 (a) AMENDMENT.—Section 973 of the Energy Policy
8 Act of 2005 (42 U.S.C. 16313) is amended to read as
9 follows:

1 **“SEC. 973. SOLAR FUELS BASIC RESEARCH INITIATIVE.**

2 “(a) INITIATIVE.—

3 “(1) IN GENERAL.—The Secretary shall carry
4 out a research initiative, to be known as the Solar
5 Fuels Basic Research Initiative, to expand theo-
6 retical and fundamental knowledge of photo-
7 chemistry, electrochemistry, biochemistry, and mate-
8 rials science useful for the practical development of
9 experimental systems to convert solar energy to
10 chemical energy.

11 “(2) LEVERAGING.—The Secretary shall lever-
12 age expertise and resources from the Basic Energy
13 Sciences Program and Biological and Environmental
14 Research Program within the Office of Science, and
15 the Office of Energy Efficiency and Renewable En-
16 ergy, as provided under subsections (b) and (c).

17 “(3) TEAMS.—The Secretary shall organize ac-
18 tivities under the Solar Fuels Basic Research Initia-
19 tive to include multidisciplinary teams leveraging ex-
20 pertise from the National Laboratories, universities,
21 and the private sector to the extent practicable.
22 These multidisciplinary teams shall pursue aggres-
23 sive, milestone-driven basic research goals. The Sec-
24 retary shall provide sufficient resources for those
25 teams to achieve those goals over a period of time
26 to be determined by the Secretary.

1 “(4) ADDITIONAL ACTIVITIES.—The Secretary
2 is authorized to organize additional activities under
3 this subsection through Energy Frontier Research
4 Centers or other organizational structures.

5 “(b) ARTIFICIAL PHOTOSYNTHESIS.—

6 “(1) IN GENERAL.—The Secretary shall, as
7 part of the Solar Fuels Basic Research Initiative,
8 carry out a program to support research needed to
9 bridge scientific barriers and discover knowledge rel-
10 evant to artificial photosynthetic systems. In car-
11 rying out activities under this subsection, the Direc-
12 tor of the Office of Basic Energy Sciences shall sup-
13 port basic research to pursue distinct lines of sci-
14 entific inquiry, including photoinduced production of
15 hydrogen and oxygen from water, and the sustain-
16 able photoinduced reduction of carbon dioxide to fuel
17 products including hydrocarbons, alcohols, carbon
18 monoxide, and natural gas. The Assistant Secretary
19 for Energy Efficiency and Renewable Energy shall
20 support translational research, development, and val-
21 idation of physical concepts developed under this
22 subsection.

23 “(2) STANDARD OF REVIEW.—The Secretary
24 shall review the program activities under this sub-

1 section to determine the achievement of technical
2 milestones.

3 “(3) AUTHORIZATION OF APPROPRIATIONS.—

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

8 “(i) \$50,000,000 from funds within
9 the Basic Energy Sciences Program ac-
10 count; and

11 “(ii) \$25,000,000 from funds within
12 the Energy Efficiency and Renewable En-
13 ergy account.

14 “(B) PROHIBITION.—No funds authorized
15 under this subsection may be obligated or ex-
16 pended for commercial application of energy
17 technology.

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

20 “(1) IN GENERAL.—The Secretary shall, as
21 part of the Solar Fuels Basic Research Initiative,
22 carry out a program to support research needed to
23 replicate natural photosynthetic processes by use of
24 artificial photosynthetic components and materials.

25 In carrying out activities under this subsection, the

1 Director of the Office of Basic Energy Sciences shall
2 support basic research to expand fundamental
3 knowledge to replicate natural synthesis processes,
4 including the photoinduced reduction of dinitrogen
5 to ammonia, absorption of carbon dioxide from am-
6 bient air, molecular-based charge separation and
7 storage, photoinitiated electron transfer, and catal-
8 ysis in biological or biomimetic systems. The Asso-
9 ciate Director of Biological and Environmental Re-
10 search shall support systems biology and genomics
11 approaches to understand genetic and physiological
12 pathways connected to photosynthetic mechanisms.
13 The Assistant Secretary for Energy Efficiency and
14 Renewable Energy shall support translational re-
15 search, development, and validation of physical con-
16 cepts developed under this subsection.

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

21 “(3) AUTHORIZATION OF APPROPRIATIONS.—

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

1 “(i) \$50,000,000 from funds within
2 the Basic Energy Sciences Program and
3 Biological and Environmental Research
4 Program accounts; and

5 “(ii) \$25,000,000 from funds within
6 the Energy Efficiency and Renewable En-
7 ergy account.

8 “(B) PROHIBITION.—No funds authorized
9 under this subsection may be obligated or ex-
10 pended for commercial application of energy
11 technology.

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

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

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