



June 30, 2016

Honorable Lamar Smith
Chairman
House Committee on Science, Space & Technology
2409 Rayburn House Office Building
Washington, D.C. 20515

Honorable Eddie Bernice Johnson
Ranking Member
House Committee on Science, Space & Technology
2468 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairman Smith and Ranking Member Johnson:

I am writing to urge you to support the **Solar Fuels Innovation Act**, a bill that is scheduled to be introduced by the House Subcommittee on Space, Science and Technology on July 6. This bill will give a major boost to basic scientific research and to the development of technologies that will do what plants do – i.e., convert solar energy to a variety of fuels and chemicals – but with much higher efficiency and at low cost.

I am an academic scientist who has worked in solar energy research for the past 30 years. I'm a member of the National Academy of Sciences, and am chair of the scientific advisory board of the Joint Center for Artificial Photosynthesis (JCAP), a Hub supported by the Department of Energy with the mission of developing the science that underpins future solar fuels technology. Having studied this problem for many years, I am convinced that the next decade presents a huge opportunity for the U.S. to take the lead in solar fuels, and that an investment in R&D in this area can pay large dividends in the future.

Solar fuels research is timely because it builds on progress made over the past several decades in solar energy R&D. Solar electricity, which was prohibitively expensive even ten years ago, is rapidly becoming cost-competitive with electrical power from legacy sources (coal, gas, nuclear). The cost continues to drop by about 15% per year and grid parity for solar electricity is anticipated in the 2020-2022 timeframe. We will soon see rapid growth of solar electricity as commodity energy. That's the good news. But the bad news is that about 80% of energy use in the U.S. is not electricity but fuel, and the need for fuel energy is growing steadily here and around the world. Currently, there is no cost-effective way to convert electrical energy to high energy density fuels such as gasoline or methane. However, new science is being developed to enable solar cells to produce fuel *directly* rather than make electricity. These devices can leverage the advances that have been made in solar electricity research, but big problems remain to be solved in materials,

catalysis, separations, and system integration. There are now major efforts on these problems around the world, with the largest and best coordinated programs in Europe and Asia. I believe that it is essential for the U.S. to take the lead in developing this future energy technology.

For these reasons I greatly appreciate your sponsorship of this important legislation.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Mallouk', with a stylized flourish at the end.

Thomas E. Mallouk