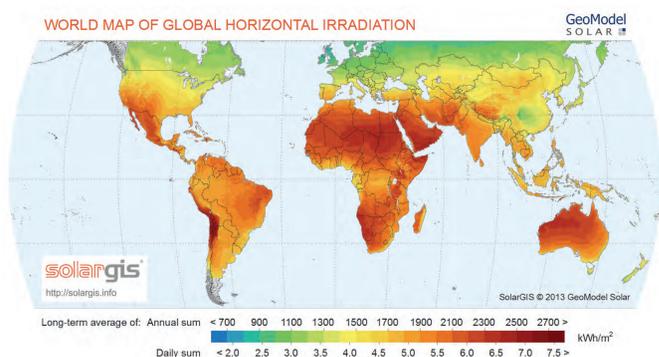


Solar Fuels

To fuel or not too fuel?



The sun is the most plentiful and widely distributed energy source. The sun emits enough energy in **one hour** to power the **entire world** for a **whole year**.



Renewable energy sources

Wind power is extracted from air flow using wind turbines or sails to produce mechanical or electrical power.



Blow hard to light up the lamp inside the bottle. What happens when you stop blowing?



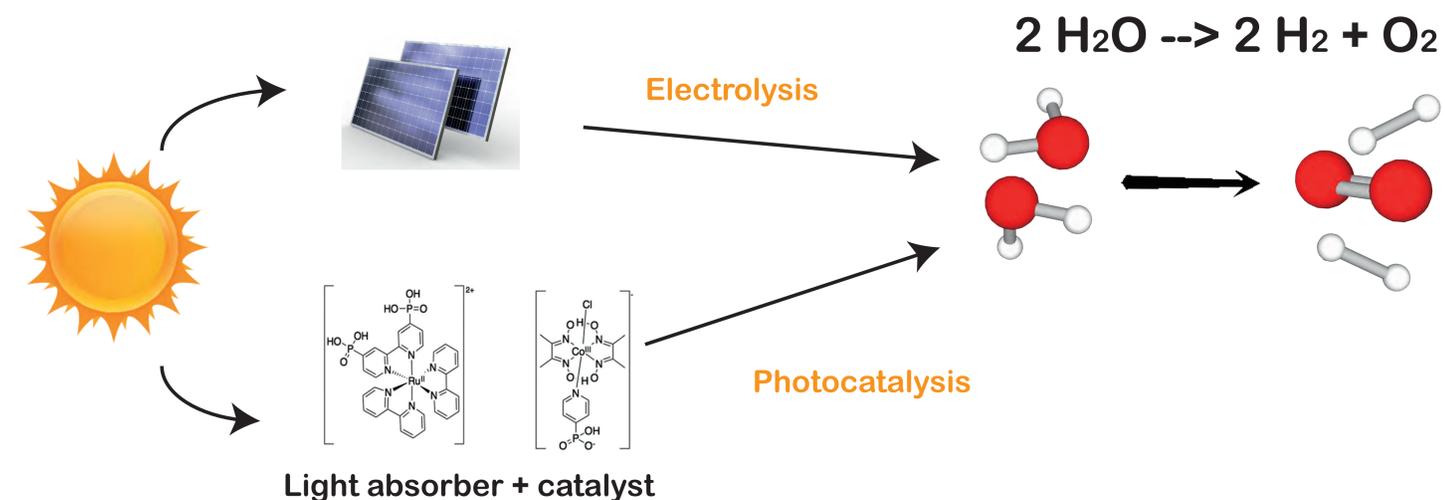
Photovoltaics convert solar energy directly into current electricity with the use of materials called “semiconductors”.

Try powering our solar car and solar mills with the torch. What happens when you switch it off?

They rely on the source being available at the time the energy is needed (so no energy on cloudy days, or when there is no wind).

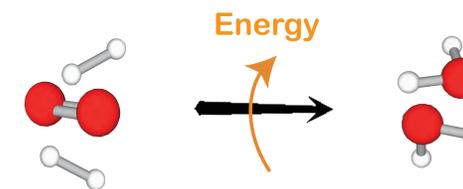


Solar fuels (hydrogen and products derived from the reduction of CO₂) can be produced using the sun's energy instead, thus “trapping” it within chemical bonds. This way it can be used when needed rather than when the sun is available.



Use our pocket sun to split some water into hydrogen fuel. You have now stored the energy of the sun in chemical bonds through electrolysis and photocatalysis!

Now that you have hydrogen fuel, you can feed it to a **fuel cell** to revert the reaction and release the energy within the molecules!



Now fill in the H-racer tank with hydrogen and enjoy the energy of the sun, even when it is not around!

Here at the Reisner group, we work to develop new catalysts and materials capable of splitting water and recycling CO₂ in order to generate fuels. We make **artificial photosynthesis!** To learn more, visit: <http://www-reisner.ch.cam.ac.uk>