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Solar energy into fuels - the importance of interface catalysis[1]

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Finding sustainable energy solutions for the future will rely heavily on the energy influx from the sun. One convenient way of storing solar energy is by transforming that energy into a chemical form - like a fuel. The efficiency of such a transformation will require catalysts that are optimized for specific reactions, and we will need to find new catalysts for a number of processes, if we are to successfully synthesize fuels from sunlight. A fundamental insight into the way the catalysts work at the molecular level is an essential ingredient if one wants to speed up the discovery process. In this presentation I will discuss some of the challenges in catalyst discovery. In particular, I will focus on the conversion of syngas to methanol, an important sub-reaction in the biomass to fuels process.

[1]U.S. Dept. of Energy, Office of Basic Energy Sciences