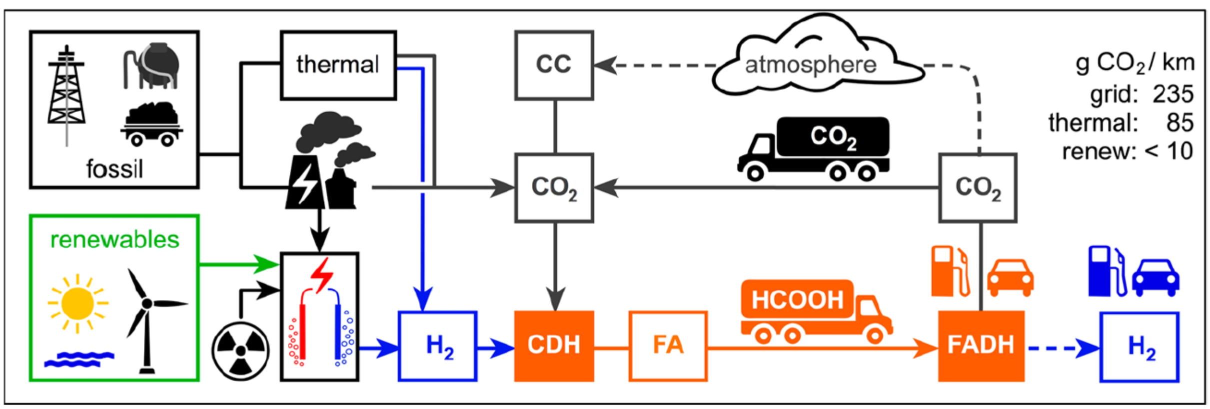
Fueling the Future

Kuo-Wei Huang

[1]KAUST Catalysis Center and Division of Physical Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal 23955-6900, Saudi Arabia.
[2]Agency for Science, Technology, and Research, Institute of Materials Research and Engineering and Institute of Sustainability for Chemicals, Energy and Environment, Singapore
Email: hkw@catalysis.energy

Abstract

The estimated world population of 8.0 billion people consumed ~15.2 Gtoe of energy (at an average rate of 20.1 TW). Globally, the burning of carbon-based fossil fuels supplies over 80% of the energy demand, and hence the prospering industrial societies are responsible for the observed increase in carbon dioxide levels from preindustrial 280 ppm to over 420 ppm measured last year. The constantly increasing atmospheric CO_2 concentration is highly likely to result in global warming, sea level rise, and ocean acidification. To reduce the environmental footprint of modern societies and address the limitations of fossil recourses, the projected increase in global energy demand must go along with the implementation of low-carbon energy production and carrier systems. In this presentation, the current energy status and future options will be discussed and compared. It will then be concluded by introducing our research efforts in utilizing formic acid as a low-carbon hydrogen/energy carrier and e-fuel.



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