

AZIZ LAB.

Advanced Utilization of Clean Secondary Energy



Department of Mechanical and Biofunctional Systems

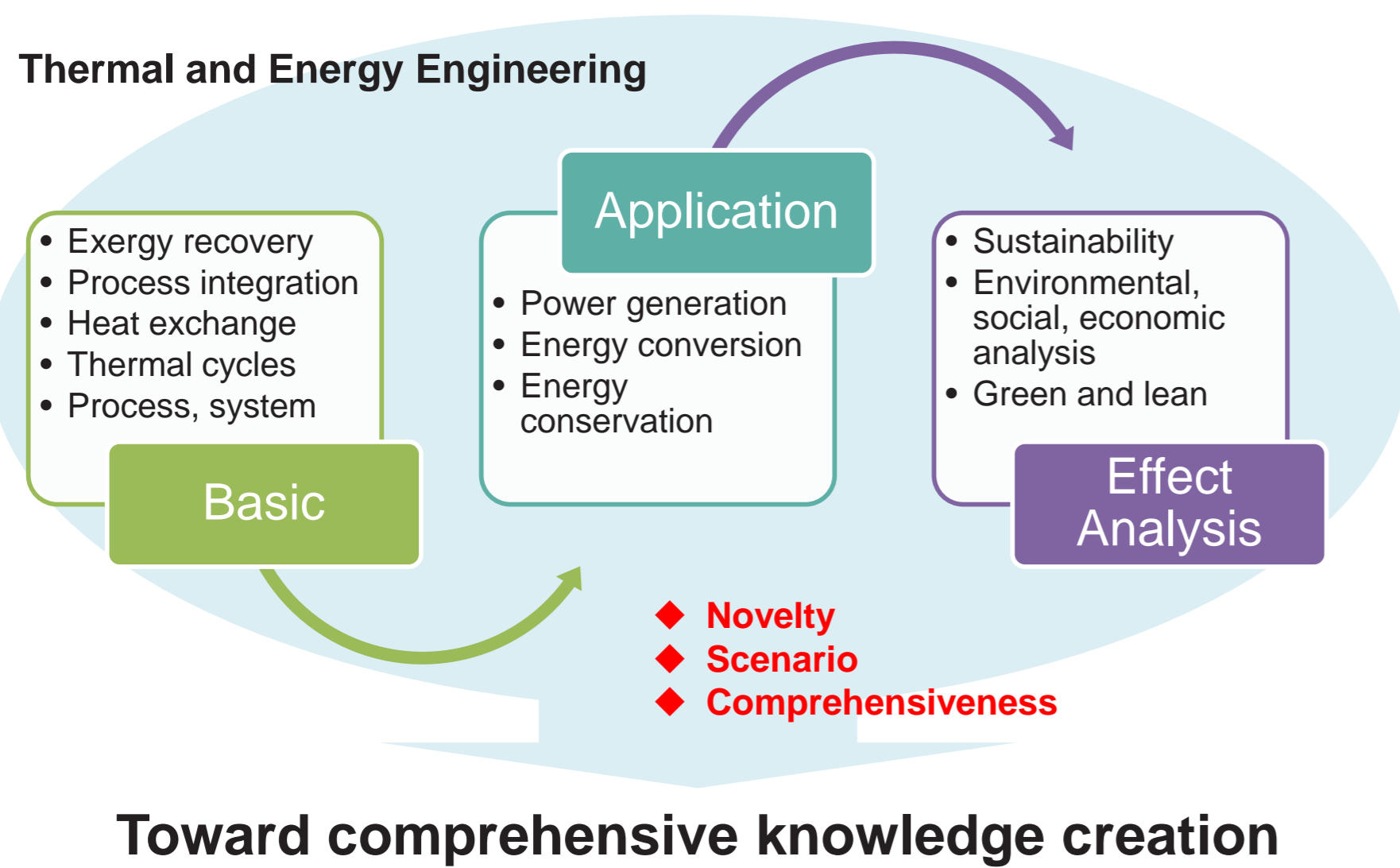
Energy system

Department of Mechanical Engineering, Graduate School of Engineering

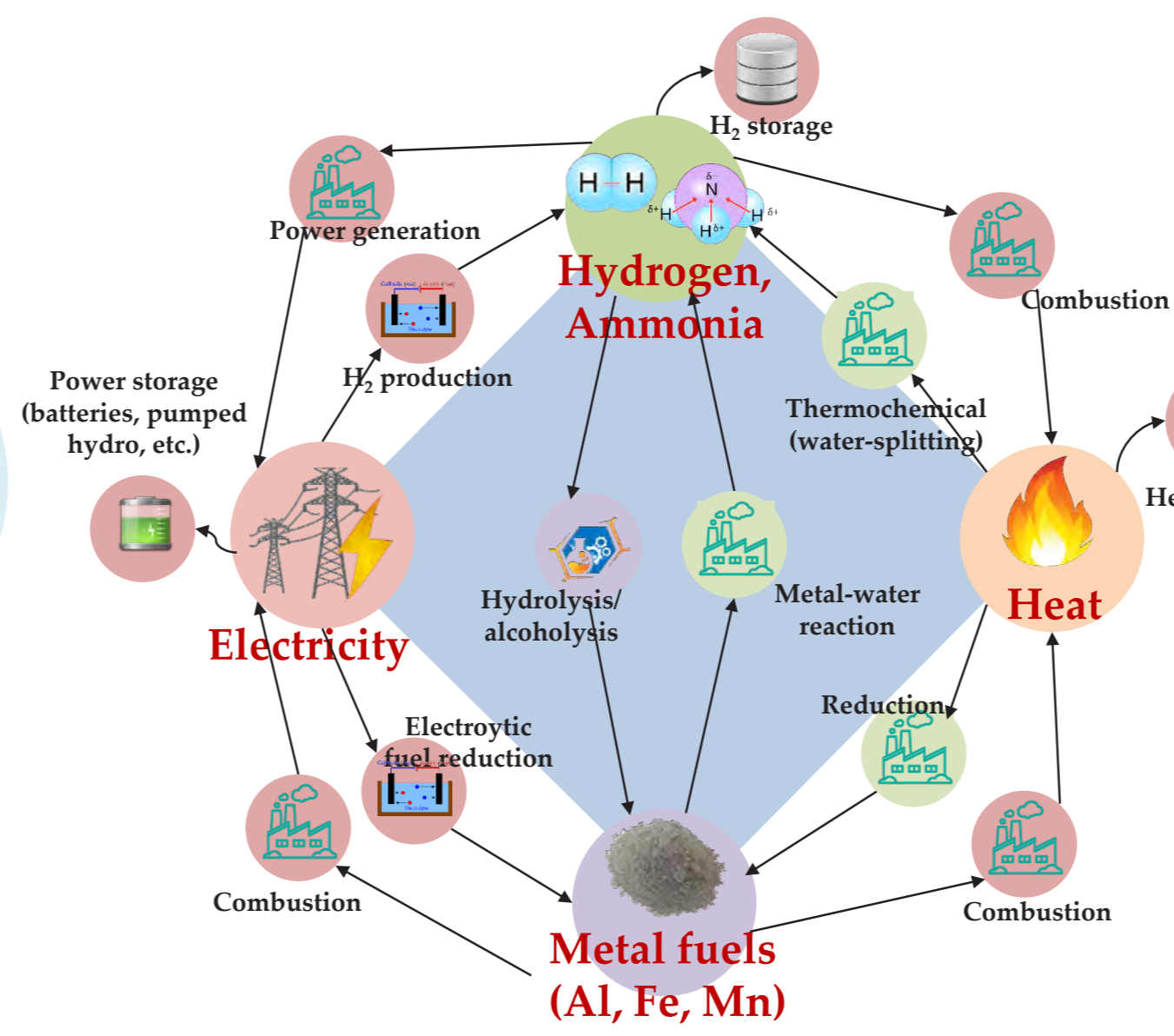
epi.iis.u-tokyo.ac.jp

Advanced adoption of clean secondary energy toward sustainability

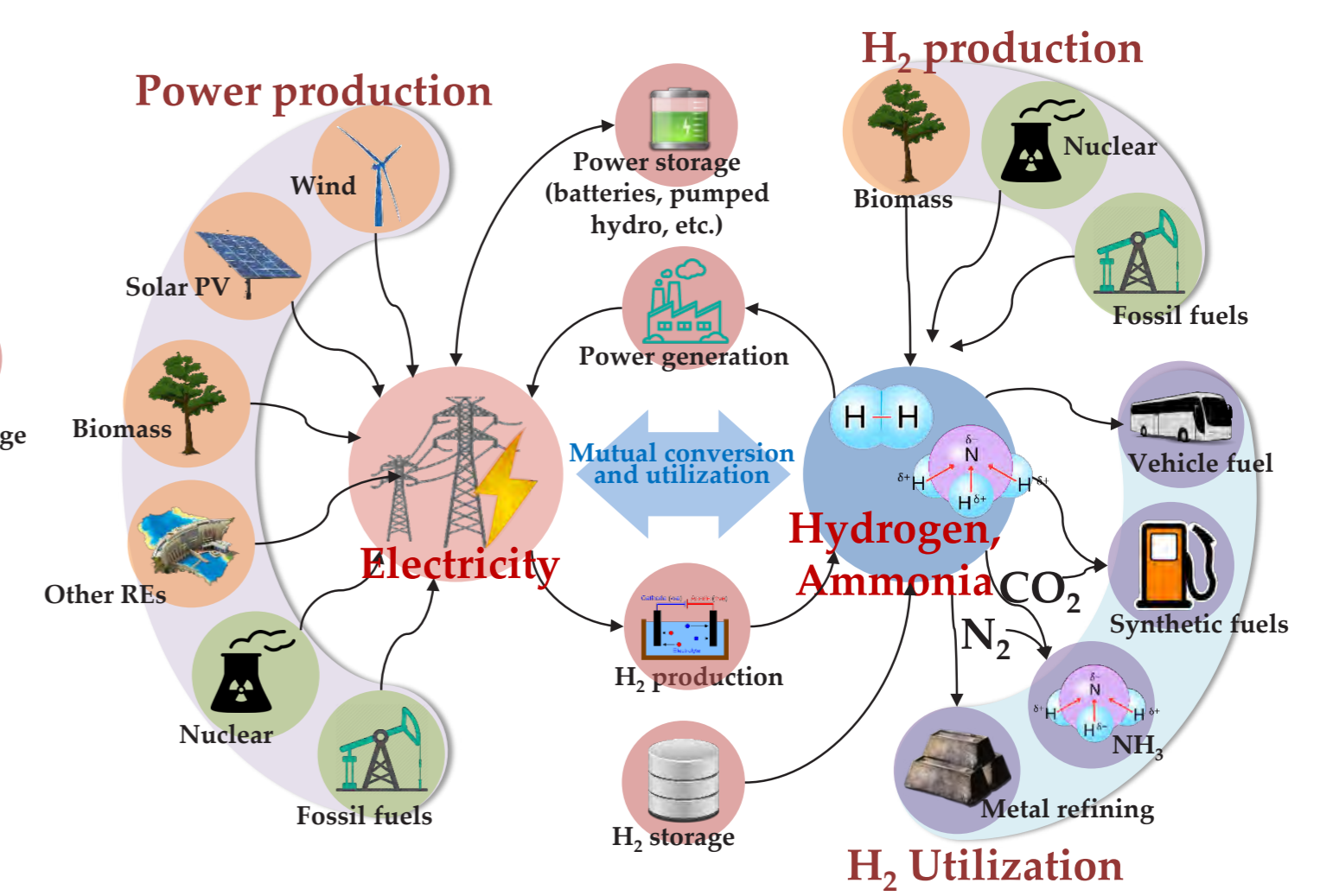
A highly efficient and clean energy system is developed toward the realization of sustainable society. Analysis and modeling of micro- to macro-scales for each individual energy conversion process and elemental technology are performed, together with the effort to integrate them efficiently. In addition, a mutual relationships (conversion, utilization, and storage) among the electricity, chemical energy, and other carbon-free secondary energy sources is also studied.



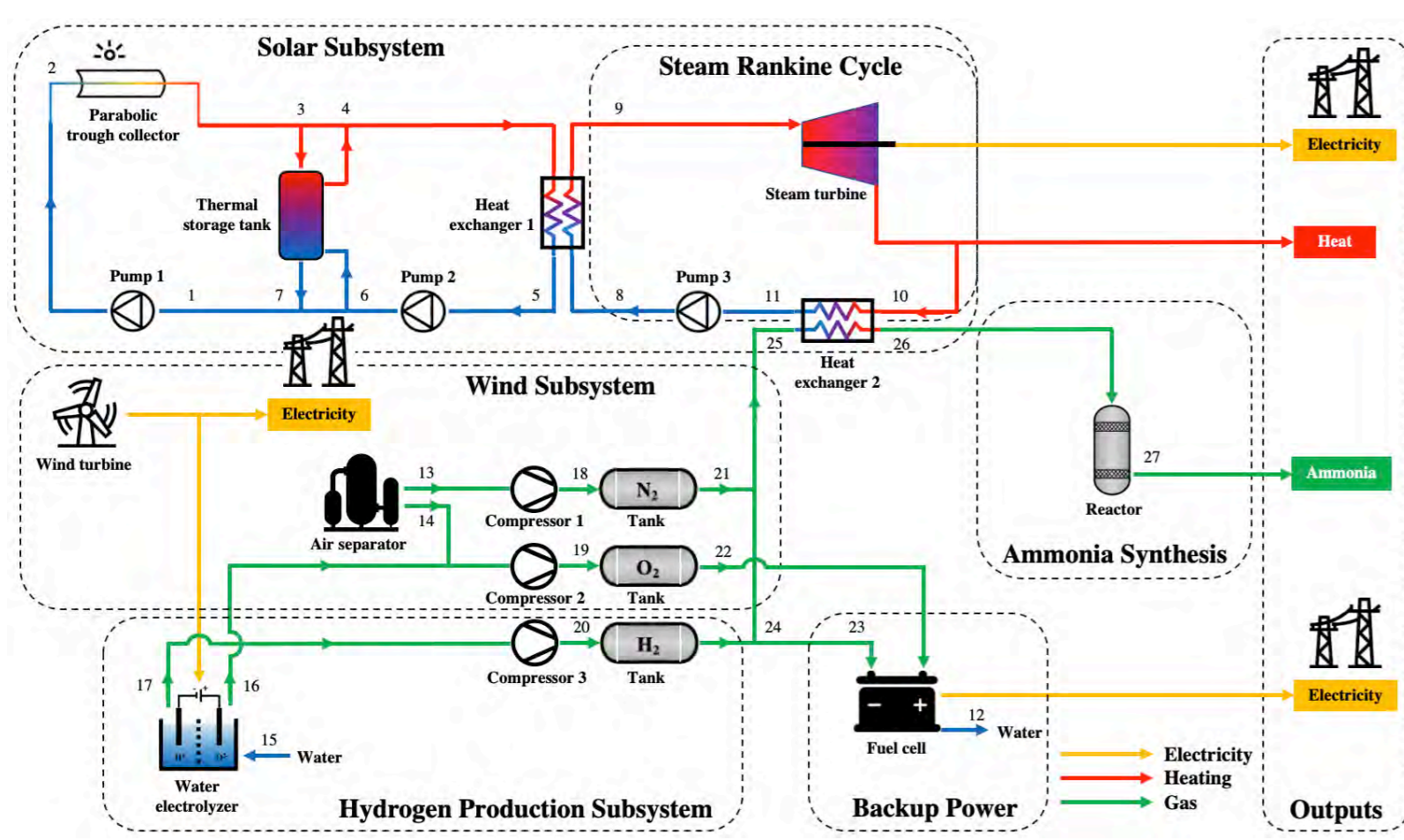
Research area and vision



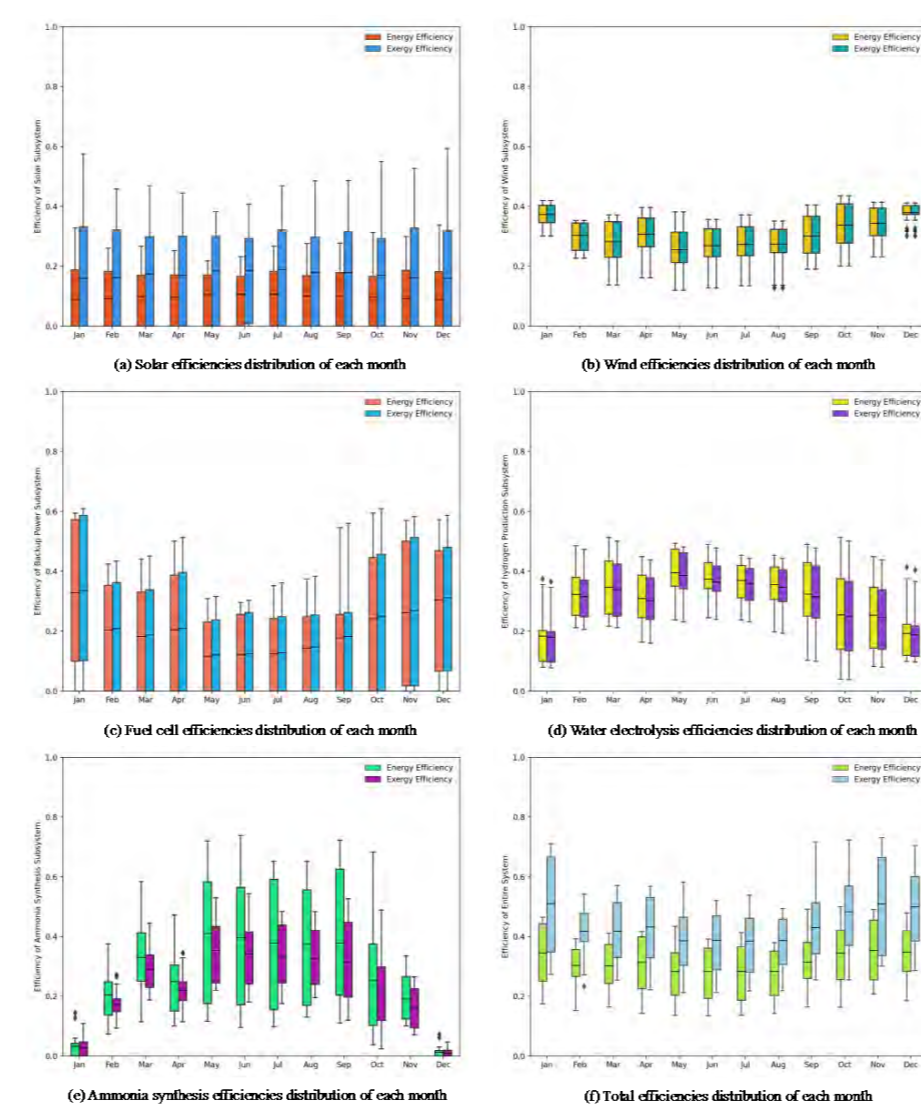
Relationships of carbon-free secondary energy sources



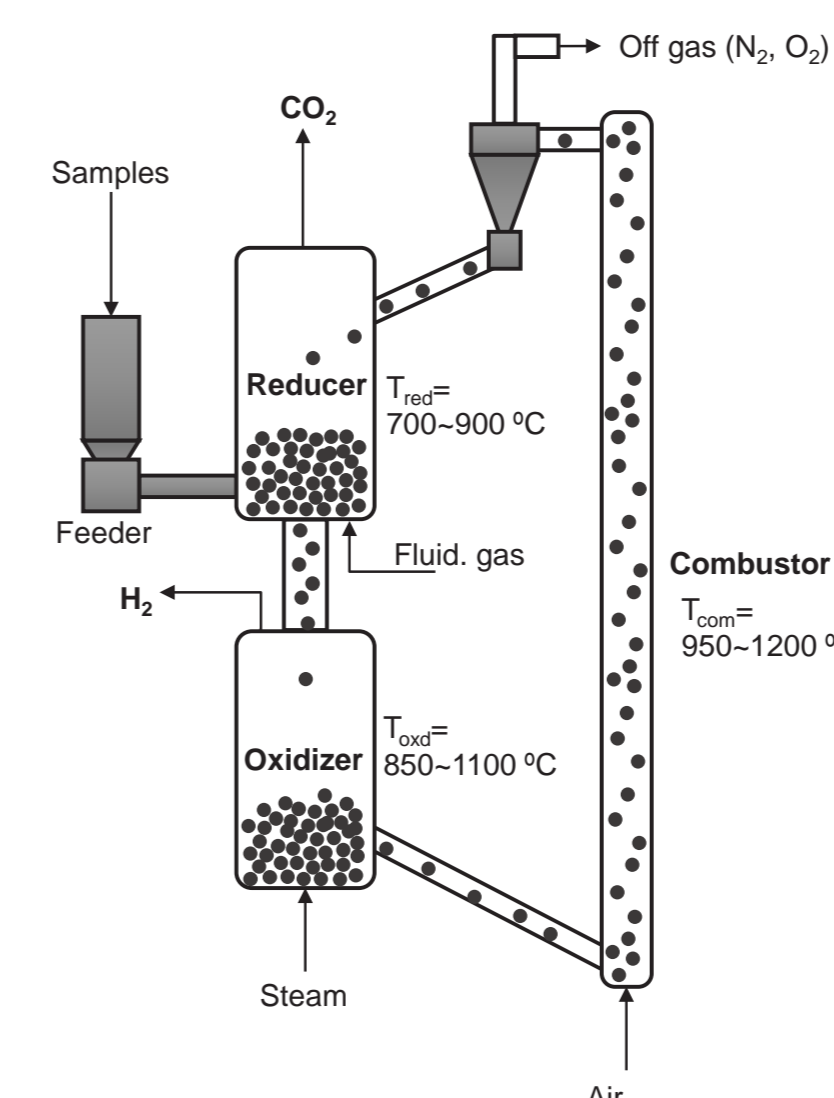
Mutual utilization of electricity and hydrogen-based fuels toward zero-carbon



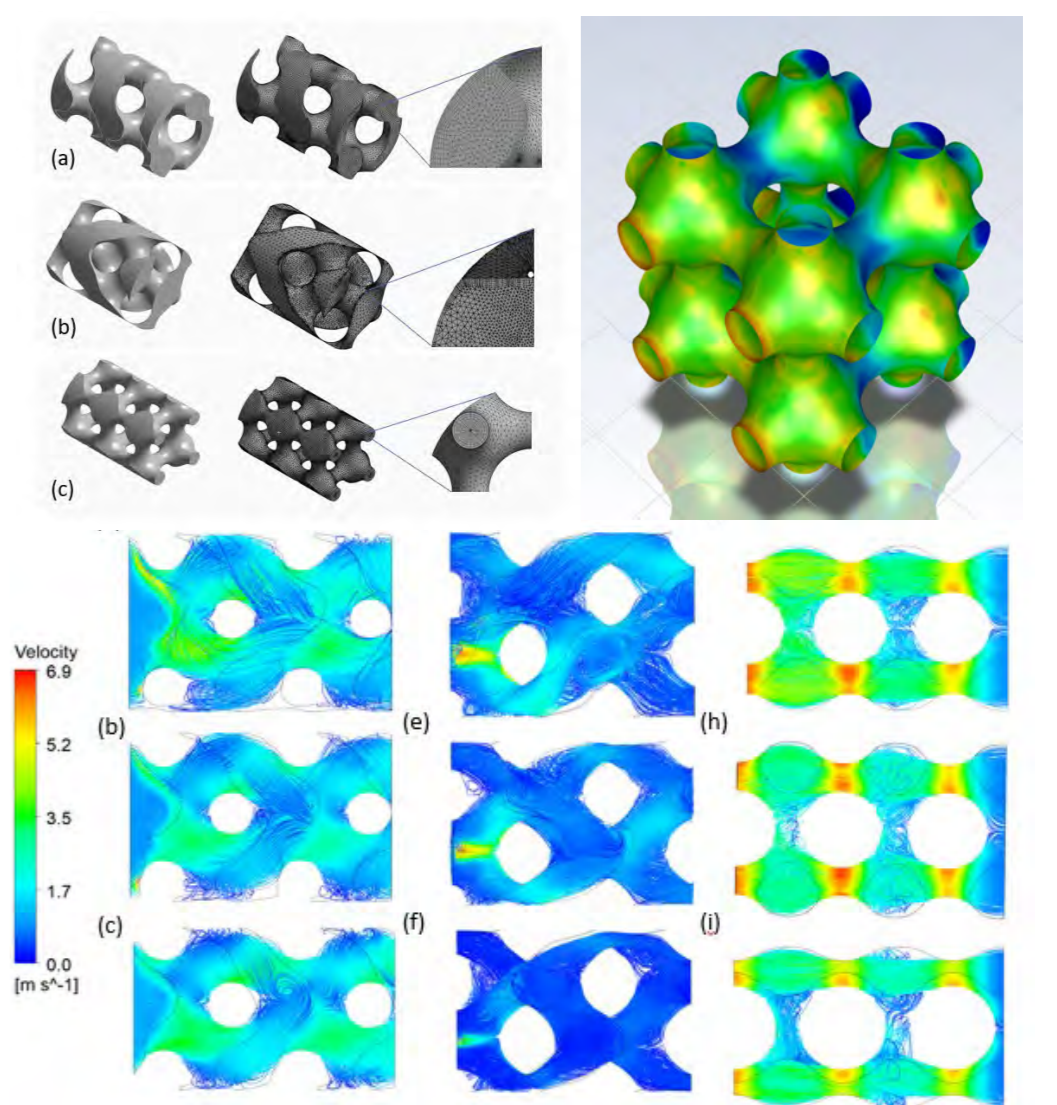
Schematic of the integrated renewable multi-generation system



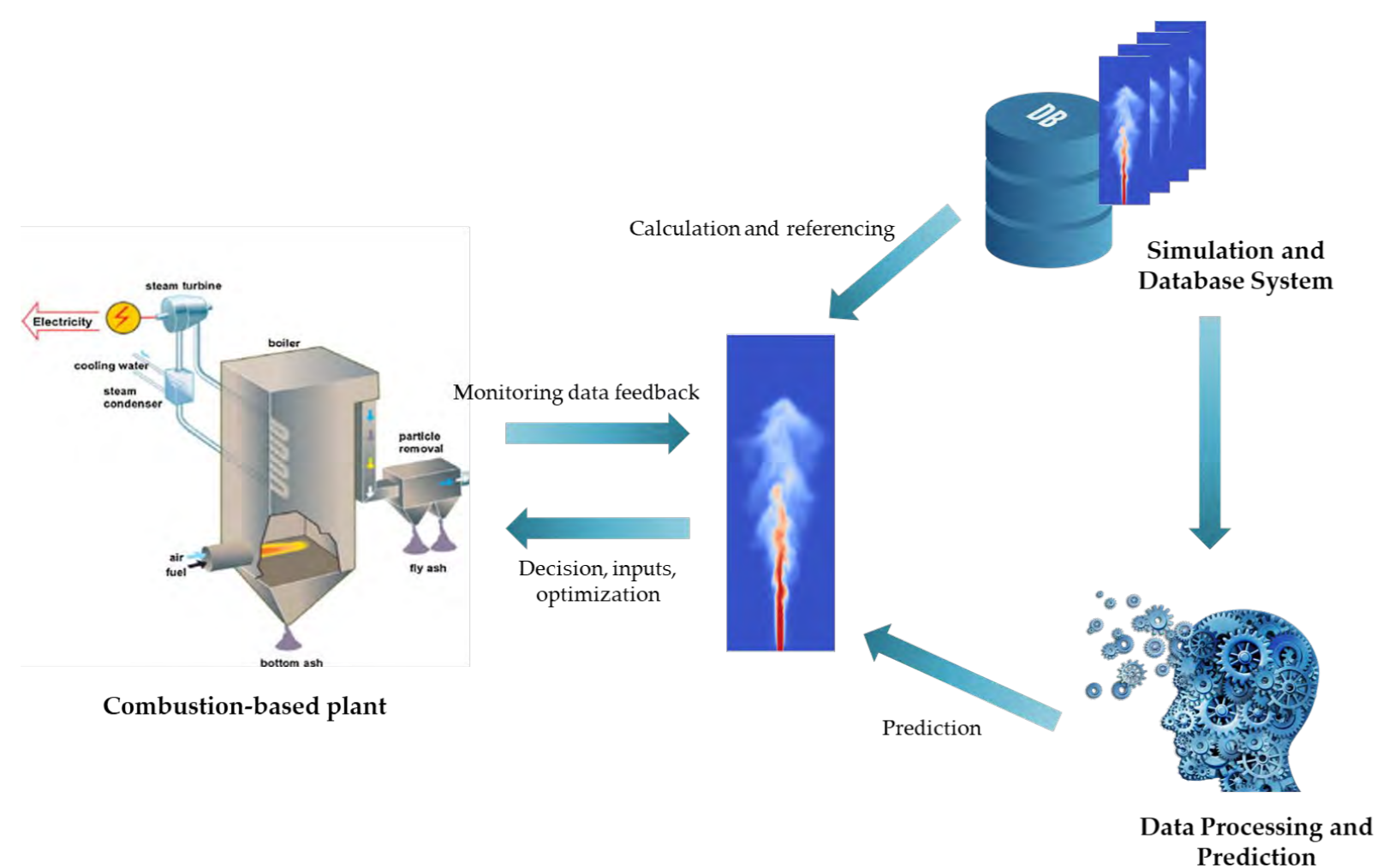
Energy, exergy, and techno-economic analyses



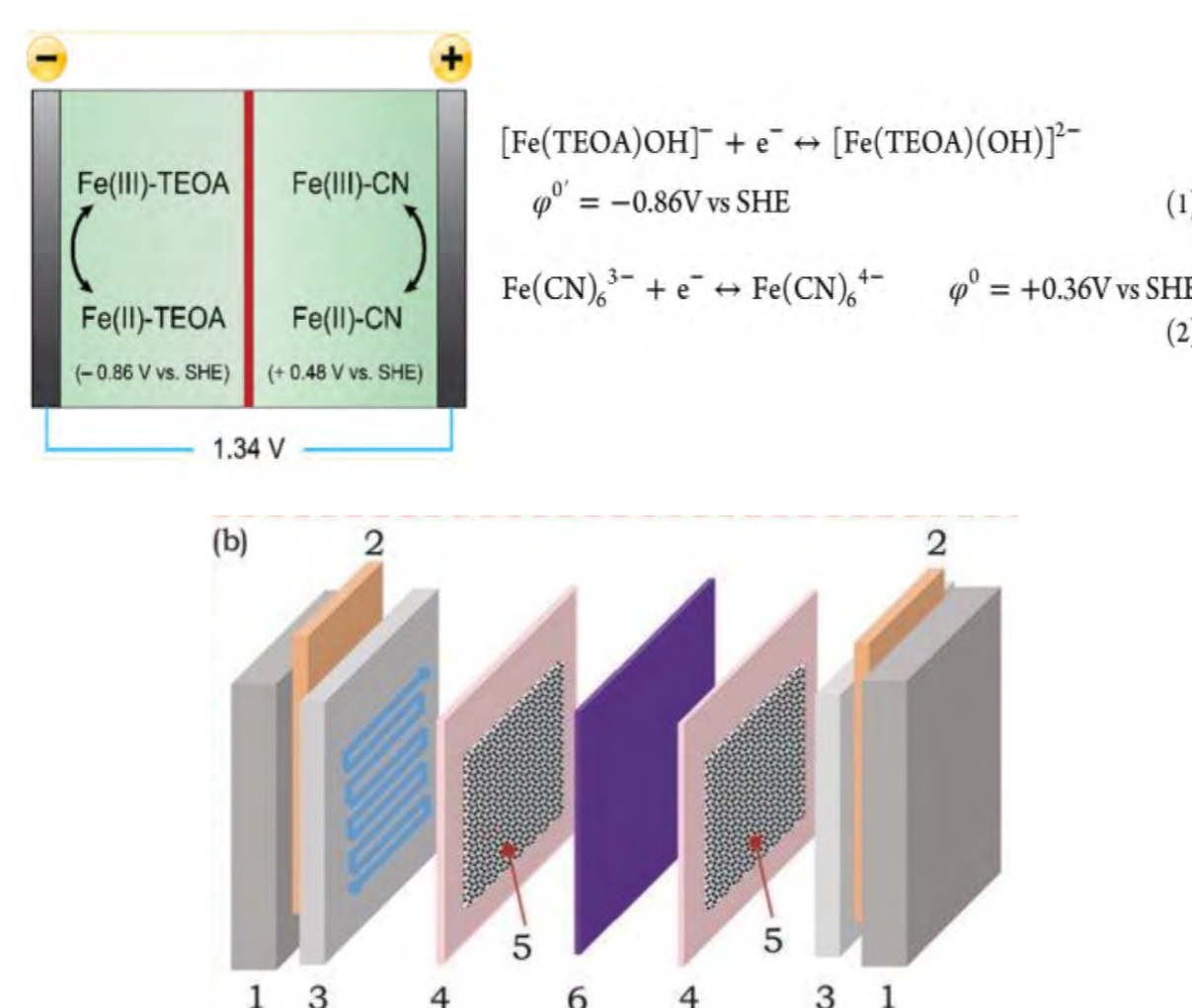
CO2-free chemical looping hydrogen production system



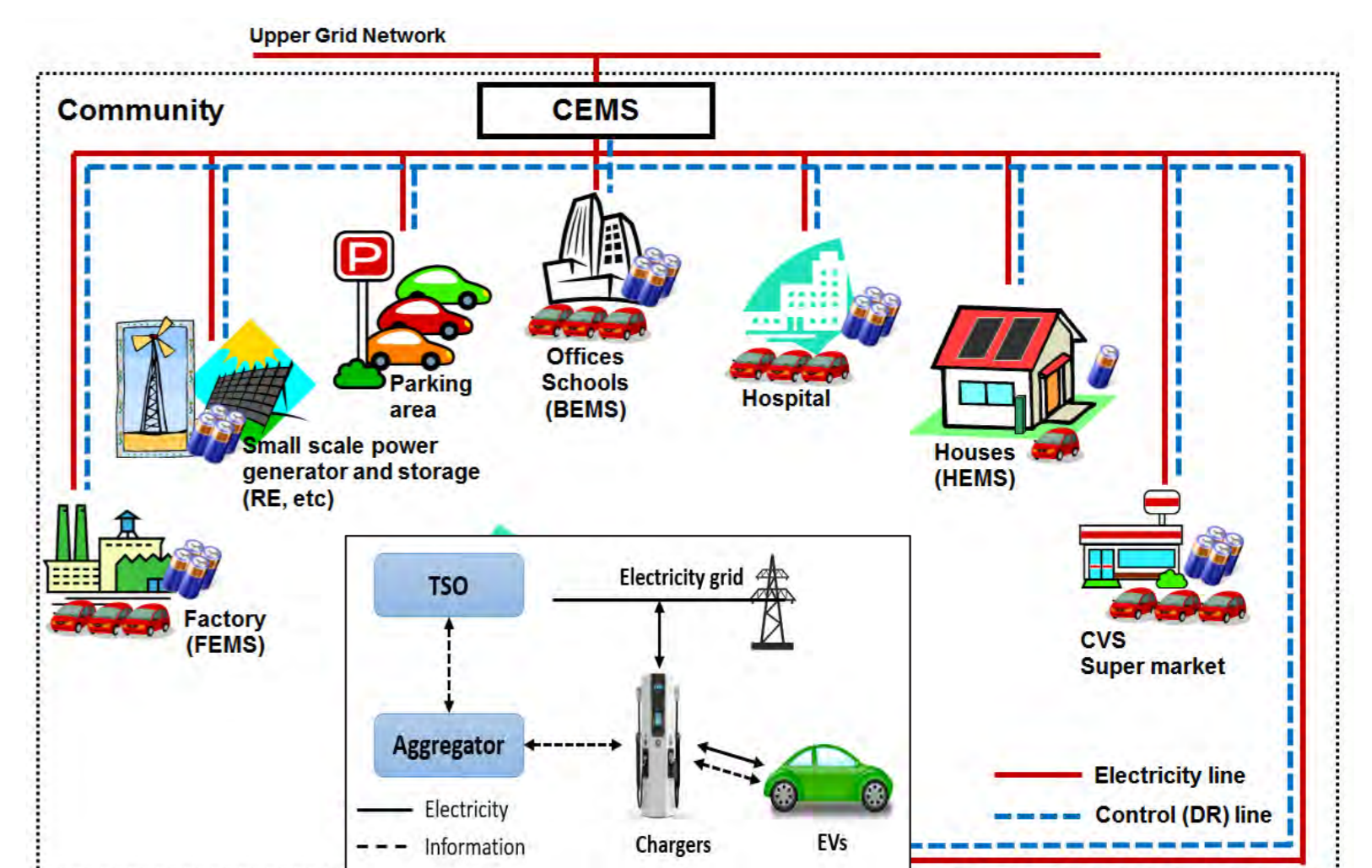
TPMS-based metal hydride hydrogen storage



Advanced combustion modeling and prediction



High density iron redox flow battery



Advanced utilization of EVs for ancillary services

