Concentrated Solar Radiation – An option for large scale renewable hydrogen production

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Converting solar energy efficiently into hydrogen is a key element to develop a sustainable and affordable hydrogen economy. The presentation will give an insight in how concentrated solar radiation can be coupled into hydrogen production processes. It will discuss the benefits and challenges of using the sunlight directly instead of converting it into other energy vectors.

The main focus will be on technologies with the perspective of large scale production at very high temperatures. Therefore solar tower systems for such production processes will be presented. Also the different components like concentrator, receiver, and reactor of the solar production plants will be described, possible locations will be discussed, and synergies with other R&D efforts on using high temperature heat will be shown. Hybrid solutions e.g. from the sulfur industry will demonstrate how concentrated solar radiation can contribute even today to actual industrial business models.

As many of the addressed processes have to be operated continuously high temperature heat storage will also be introduced. Especially thermochemical heat storage has the potential for being the ideal technology for heat provision in high temperature production processes.

The presented technologies will be put into a global picture to demonstrate the worldwide commitment in developing the technologies.