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Strategies for materials development in the field of solar light-driven water splitting

Solar energy is an inexhaustible energy source for a sustainable solution to the global energy consumption. The storage of large amounts of light energy can be achieved by conversion into chemical energy saved in biomass. Artificial photosynthesis permits the splitting of water into molecular hydrogen and oxygen and is therefore a very promising strategy to meet the increasing worldwide need for clean energy. This requires the development of high-performance water-reduction and water-oxidation catalysts where the latter is currently the main bottleneck for efficient photocatalytic water splitting. Detailed analysis of the catalytic functioning and the factors determining the efficiency of catalysts is a prerequisite for the design of more efficient catalysts. We present our recent research for the in-depth study of water splitting catalysis using forefront computational methods such as high-performance ab initio molecular dynamics.

Biography

Sandra Luber received her MSc and PhD degree from ETH Zurich in 2007 and 2009, respectively. After Post-doctoral studies at Biozentrum of the University of Basel (2010) and Yale University (2010-2011), she joined BASF SE in 2012 as Project Leader at University of Zurich. Currently, she is a SNSF Professor at the University of Zurich. She is a recipient of many awards that include the ETH medal for an Outstanding PhD Thesis, the IBM Research Prize for Computer Modeling and Simulations in Chemistry, Biology, and Materials, and the Clara Immerwahr Award 2017.

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