Hydrogen storage: from nano materials to components

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Hydrogen is the ideal clean energy carrier for our future sustainable energy economy as well as for zero-emission mobility. Recent research on materials for efficient reversible storage of hydrogen will be presented. Solid nanostructured hydrides offer a safe and energy efficient solution for stationary as well as mobile applications. Highest energy efficiencies can be achieved, if working temperature and reaction enthalpy of the respective hydrogen releasing process can be tailored for the particular system integration, e.g. with a fuel cell. Tuning of reaction enthalpies can be facilitated using Reactive Hydride Composites (RHC), which release or store hydrogen by redox reactions between at least two hydrides. Different aspects from basic materials development to systematic scale-up and system design will be covered.