



## An Experimental Conception to Catalysis in Context of an Education for Sustainable Development

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### Abstract

*Catalysis combines the economic and environmental values with each other as strong as non-other scientific or technical principle does. Production diversity of materials, that is inevitable for well-advanced technology companies, can only be achieved technically, economically and ecologically in future by developing valuable products, removing redundant products and preventing emission of pollutants, all by means of specific catalysts. The importance of catalysis for our life makes it also interesting for educational perspectives.*

*Thus, within this contribution, we present an experimental teaching concept for working on fundamental aspects of catalysis for chemistry class and student labs covering different types of catalysis, like photocatalysis and electrocatalysis. Furthermore, simple hands-on experiments will be presented, including catalyst's preparation, e.g. by precipitation and coating of metals with nanoscale metal sulphide layer, respectively. These catalysts can be used in demonstrative experiments on the generation of hydrogen (with sacrificial agent) or for evaluation of the photocatalyst's efficiency by actinometry. Additionally, simple models, didactic considerations and teaching methods will be presented explaining the functional principle of these catalysts. Finally, several contexts - relevant and appropriate for school - will be suggested, including the application of catalysts for extracting energy sources or removing environmental pollutants, facilitating good perspectives for teaching these issues with respect to Education for Sustainable Development (ESD).*

**Keywords:** Catalysis, environment, pollution, experiments;