



**Abstract**

**The dynamic structure of heterogeneous catalysts: the role of in situ spectroscopy**

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The role of heterogeneous catalysis is essential to meet the future challenges of clean energy production and storage and of sustainable chemicals production. New materials and processes must be developed, which is ideally done by design. For that structure – performance relations must be known. During a catalytic reaction, chemical bonds are broken and new ones are formed; thus intermediates form chemical bonds with the active site in a catalyst. This may alter the structure of the catalyst, which makes determining the catalyst structure under operating conditions essential. Time- and space-resolved measurements on functioning catalysts are essential. The talk will illustrate how synchrotron radiation is applied to determine the changing structure of heterogeneous catalysts with a strong focus on X-ray absorption spectroscopy.