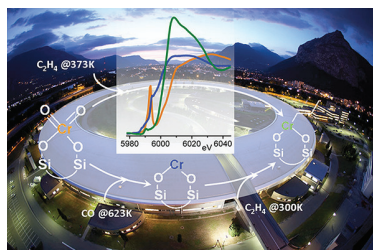


Reactivity of Surface Species in Heterogeneous Catalysts Probed by In Situ X-ray Absorption Techniques

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1. INTRODUCTION

Starting from the late seventies, the progressively increased availability of synchrotron light sources allowed the execution of experiments requiring a high X-ray flux in a continuous interval.^{1–6} Among them, X-ray absorption spectroscopy (XAS, also known as X-ray absorption fine-structure, XAFS),^{7–12} in both near (XANES) and post (EXAFS) edge regions, has become a powerful characterization technique in all the fields of materials science,^{12–35} and in particular in catalysis.^{13,16,22,23,25,30,31,36–40} After a slow start in the 1980s, mainly because of the difficulties in performing in situ experiments at the synchrotrons, the progressive development of more sophisticated and better performing experimental set-ups that allow the catalyst's state to be monitored under reactive