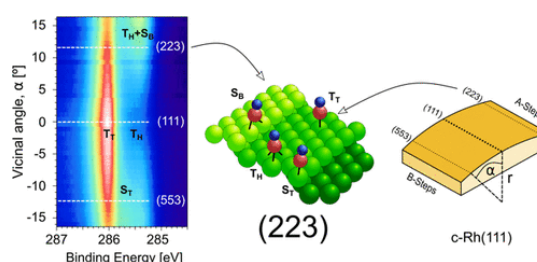


Donostia, 17/06/ 2020

PhD position in Materials Science, started in September 2020

Understanding catalytic reactions in-operando at the atomic scale: curved surfaces at ambient pressure



Catalysis is extremely important in industrial processes with notorious relation with energy and environmental problems. However, the most relevant catalytic reactions are still optimized following a trial-and-error philosophy. Further improvement requires a rational atomic-scale understanding through new sample designs and techniques that can bridge the gap with real catalyst materials. In a bid to model industrial nanoparticles in-operando, our Lab investigates curved metal surfaces exposed to millibar pressures of reactants, using novel atom-sensitive techniques that operate under such ambient-pressure conditions, such as X-ray photoemission. The candidate will focus on the exploration of the structure and electronic properties of curved crystal surfaces, and their interaction with chemically active gases, such as CO, O₂ and CO₂, using Scanning Tunneling Microscopy and X-ray Photoemission in our laboratory. This work will be combined with Ambient Pressure X-ray photoemission experiments performed in Synchrotron Radiation facilities over the world to examine the interaction of millibar mixtures of reactants and products with such curved surfaces.

Interested students please contact enrique.ortega@ehu.es


<https://cfm.ehu.es/nanophysicslab/index.html>