

XPS, XAS and XES on well-defined single crystal surfaces at atmospheric pressure will be possible with the next generation surface science soft x-ray endstation.

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Chemical reactions naturally take place at atmospheric pressure and room temperature. Well-defined single crystal surfaces can only be achieved in UHV conditions. To study natural chemical reactions on well-defined single crystal surfaces a new type of experimental setup is required. An instrument, where this kind of study is possible, will soon be ready for the first experiments here at the Stanford Synchrotron Radiation Laboratory (SSRL). The instrument

will have a special cryogenic pumping system, allowing for a high-pressure environment close to the surface, but at the same time keeping the UHV necessary for Photo- and Auger-electron detection, and x-ray emission spectroscopy (XES). The study will start with adsorption of N₂, O₂ and CO on Cu (110) and Pt (111), and then move on to study dissociation of N₂, O₂ and CO on stepped surfaces like Pt (977). The experimental results will give some important information useful for different fields, like molecular- and environmental science, biology, medical science, and of course industrial applications e.g. catalysis.

