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**The electronic structure of diodes probed under bias** PER-ANDERS GLANS, JINGHUA GUO, Advanced Light Source, Lawrence Berkeley National Laboratory, JEONG PARK, SOMORJAI GABOR, Materials Sciences Division, Lawrence Berkeley National Laboratory — Chemists have known for decades that when metal nano-particles are affixed to a catalytically inactive oxide surface, the catalytic turnover rate of the array is more than 10 times that of a metal surface alone. However, the mechanism behind the effect is not clear. To understand the catalytic activity of the interface between the metal nano-structures and the oxide substrate, we have investigated the electronic structure of Pt and Pd doped diodes on a  $\text{TiO}_2$  substrate. The devices were put under bias during the measurements in an attempt to reproduce the potential differences found over the diode when used as a catalyst. This is challenging for electron based measuring techniques, but using photon-in, photon-out techniques we have successfully probed the electronic structure of Pt and Pd doped diodes under bias. The results from soft x-ray absorption and emission will be presented.

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