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Adsorption of molecular oxygen and SO₂ on Ni(100)

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The interaction of oxygen with a Ni(100) surface has been investigated using X-ray Photoelectron Spectroscopy (XPS) and Near-Edge X-ray Absorption Fine Structure (NEXAFS) technique. Below 200 L oxygen exposure, molecular oxygen was dissociated to atomic oxygen. Increasing oxygen exposure, O-1s binding energy shifted from 531.0 eV to 533.0 eV due to molecular adsorption. The presence of molecular oxygen species was confirmed by NEXAFS. Molecular oxygen adsorbed on Ni(100) was oriented perpendicular to the surface. Upon heating over 150 K molecularly adsorbed oxygen species dissociated to atomic oxygen. Adsorption geometry of SO₂ on molecular oxygen surface was also analyzed using NEXAFS.

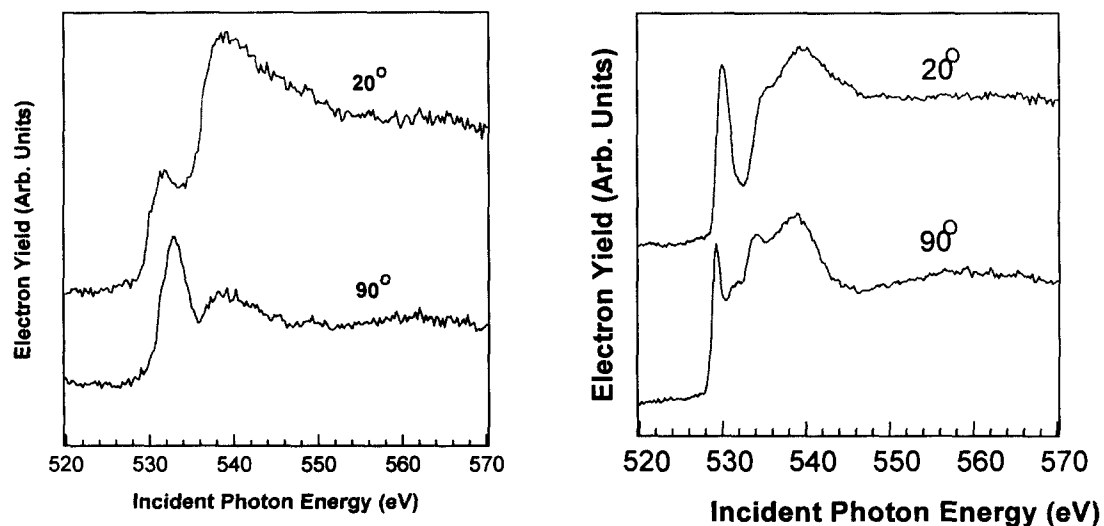


Fig. (a) NEXAFS features of molecular oxygen on Ni(100)

(b) NEXAFS features of SO₂ coadsorbed with O₂ on Ni(100)