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Photocatalytic reaction of catechol on rutile titanium oxide PETER JACOBSON, CHUNDAO WANG, ULRIKE DIEBOLD, Tulane University — In an attempt to understand the fundamental aspects of photocatalysis we have studied the substituted benzene catechol on TiO_2(110). Previous studies have given detailed information about the catechol bonding configuration letting our group focus on molecular level interactions with scanning tunneling microscopy and X ray photoelectron spectroscopy. Under UV exposure (248 nm) in an oxygen background, catechol is observed to degrade via oxidation. This oxidation process results in removal of roughly 10% of the initial monolayer. The removal of carbon from the TiO_2 surface is shown to depend upon the background gas. Formation of a residual carbon layer is achieved by annealing the catechol monolayer to 600C. This carbon layer is more difficult to remove by photocatalytic oxidation than a pristine catechol monolayer. Work supported by Intel Corporation

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