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***In-situ* NAP XPS studies of dissociative water adsorption on GaAs(100) surfaces**[1] SYLWIA PTASINSKA, XUEQIANG ZHANG, University of Notre Dame — In current semiconductor-based technology it is important to design and fabricate new materials in order to achieve specific well-defined properties and functionalities. Before such systems can be applied they first need to be understood, refined and controlled. Therefore, a basic knowledge about molecule/semiconductor surface interfaces is essential. In the present work dissociative water adsorption on the GaAs(100) surface is monitored using X-ray Photoelectron Spectroscopy (XPS) performed *in situ* under near ambient conditions. Firstly, the crystal surface is exposed to water vapor pressures ranging from UHV to 0.5 kPa. At elevated pressures an increase of oxygenation and hydroxylation of Ga surface atoms has been observed in the Ga2p XPS spectra. Moreover, intense signals obtained from molecularly adsorbed water molecules or water molecules adsorbed *via* hydrogen bond to surface OH groups have been also observed in the O1s spectra. Finally, the crystal surface is annealed up to 700 K at water vapor pressure of 0.01 kPa, which leads to desorption of physisorbed water molecules and further increase of surface oxidation.

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