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The adsorption of water molecules on the Si(001)-2×1 surface SANG-YONG YU, HANCHUL KIM, JA-YONG KOO, Korea Research Institute of Standards and Science — The water molecules exist even in the ultrahigh vacuum. On the one hand, they contaminate the surface of Si(001) wafer and deteriorate the films grown on the surface. On the other hand, they can be used to grow good oxides on the Si(001) surface at high temperature. We investigated the adsorption of water molecules on the Si(001)-2×1 surface by scanning tunneling microscopy. We could find two types of adsorption configuration. In one configuration the water molecule sits on top of one Si dimer, in another configuration the water molecule adsorbs on two Si atoms of neighboring Si dimers in the same dimer row. The ratio between the two features at high temperatures show interesting properties.

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