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【202】Electron Dynamics on Cu2O(111) Probed with Time-Resolved Photoemission

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Cuprous oxide is a promising material for light absorption and charge separation in photoelectrochemical cells for solar water splitting. We have investigated the electron dynamics on the (111) surface of Cu2O. Depending on the defect concentration, this surface shows two different reconstructions. For the (1x1) structure a fast relaxation of a higher conduction band into the conduction band minimum takes place, followed by a slow depopulation of the latter (20ps). For the (√3x√3)R30° surface, the properties change drastically. Comparative studies show that the defect density and band bending play key roles in the dynamics at these surfaces.

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